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ABSTRACT

This curriculum framework is intended to serve as a comprehensive guide for redesigning curriculum, instruction, assessment, and professional development around the new Colorado state model of content standards for K-12 geography education. The framework enumerates strategies and ideas for implementing the new standards at the district, school, and classroom level. Part 1 of the framework, "Exploring Standards," provides an introduction to the new geography standards, and traces their evolution at the national and state level over the past several years. A set of model benchmarks offers examples of how each of the six standards can be woven into the curriculum at various grade levels. Part 2, "Charting a New Course," explores the "nuts and bolts" of redesigning curriculum, instruction, and assessment around the new standards. This includes: (1) developing a standards-based unit of instruction; (2) incorporating the standards into existing curriculum; (3) developing new ways of assessing students' learning progress; (4) using technology more effectively; (5) using the local community for field studies and other hands-on learning experiences; and (6) accommodating the special needs of gifted students, students with learning disabilities, and students with limited proficiency in English. Part 3, "Training the Expeditionary Team," offers guidelines for developing school- and district-based professional development programs, and part 4, "Developing and Sharing New Resources," contains additional materials. (BT)

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Mapping Out a Standards-Based Framework for GEOGRAPHY

The Colorado Geography Curriculum Framework

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William T. Randall
Commissioner of Education

Richard A. Laughlin
Deputy Commissioner

Dear Colleague,

The Colorado Geography Curriculum Framework is the result of a two-year effort to provide Colorado educators with the resources, tools and strategies they will need to bring the new geography standards to life in their classrooms. It is a framework from which teachers, curriculum writers, administrators and community members can transfer content-driven curriculum into exciting classroom activities for students.

As you will see, the framework comprises a wide array of ideas and models for innovative curriculum design, assessment and teacher training, as well as suggestions for stimulating parent/community interest and support.

The underlying supposition is that curriculum is best developed at the local level. It must however, be the product of a well-planned collaborative effort that includes design, piloting, implementation and evaluation. In addition, the curriculum must be clearly woven together with a thoughtful staff development and instruction plan.

Our hope is that local schools and districts working in conjunction with the Colorado Department of Education can utilize the framework and resource documents to make geography skills and knowledge a vital part of every student's education.

Sincerely,

William T. Randall
Commissioner of Education

Acknowledgments

Acknowledg-
ments

Mapping Out A Standards-based Framework For Geography: The Colorado Geography Curriculum Framework

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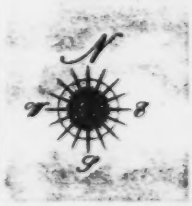

Ordering Information

Copies of the Colorado Geography Curriculum Framework are available for $45 each for Colorado residents from the Colorado Department of Education, 201 East Colfax Avenue, Denver, Colorado 80203.

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Special thanks are due to the members of the Geography Standards Task Force:

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Corine O'Donnell, teacher (retired), Campbell Elementary School, Jefferson County School District

Jerry Reed, teacher, Alamosa High School, Alamosa School District

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Table of Contents

The ***Colorado Geography Curriculum Framework*** is intended to serve as a comprehensive guide for redesigning curriculum, instruction, assessment and professional development around the new state model content standards for K-12 geography education.

As you will see, the Framework isn't a checklist of do's and don'ts or a one-size-fits-all instruction manual. Rather, it is a versatile, flexible tool to assist schools and districts in designing programs that improve and enrich geography education in Colorado classrooms, and that reflect, in the words of House Bill 93-1313, "the highest possible expectations" for all students.

Developed by a team of K-12 teachers and higher education professionals in conjunction with the Colorado Department of Education staff, the Framework sets forth a variety of strategies and ideas for implementing the new standards at the district, school and classroom level.

Part 1: Exploring Standards provides an introduction to the new geography standards, and traces their evolution at the national and state level over the past several years. Also included is a set of model benchmarks, which offer examples of how each of the six standards can be woven into the curriculum at various grade levels.

Part 2: Charting a New Course explores the "nuts and bolts" of redesigning curriculum, instruction and assessment around the new standards, including:

- How to develop a standards-based unit of instruction.
- How to incorporate the standards into existing curriculum.
- How to develop new ways of assessing students' learning progress.
- How to use technology more effectively.
- How to use the local community for field studies and other hands-on learning experiences.
- How to accommodate the special needs of gifted students, students with learning disabilities and students with limited proficiency in English.

- How to stimulate interest in and support for standards among parents, students and the local community.

This section of the Framework also includes three model curriculum units, designed and developed by classroom teachers, that illustrate how to make the shift from traditional geography lessons to inquiry-based units of instruction at the elementary, middle and high school level.

Part 3: Training the Expeditionary Team offers guidelines for designing school-and district-based professional development programs that provide teachers with the skills and knowledge they will need to use the new geography standards effectively in their classrooms.

The focus of **Part 4: Developing and Sharing New Resources** is the emerging infrastructure of support for school- and district-based efforts to implement standards, including the new State Standards and Assessment Resource Bank and the programs, services and materials available to educators through the Colorado Geographic Alliance.

The final component of the Framework is a 33-minute videotape featuring an overview of the new standards, hosted by University of Colorado geography professor A. David Hill; a teacher roundtable discussion, moderated by University of Northern Colorado geography professor David Cole, focusing on commonly asked questions about standards; and footage from Colorado Springs classrooms in which students are engaged in a standards-based unit entitled "A Kids' Community Guide."

The Colorado Geography Curriculum Framework is the product of a yearlong collaborative effort involving the Colorado Department of Education, the Colorado Geographic Alliance, geography professors from the University of Colorado and the University of Northern Colorado, and elementary, middle and high school teachers from five "catalyst" school districts.

The project began in late 1993 with a grant to the state education department for the development of a framework and action plan providing a bridge between the new state standards and the classrooms of Colorado.

Throughout 1994, teams of teachers from the five catalyst districts, each working with a master geography teacher and a geography professor from UNC or CU, designed and developed curriculum units incorporating the essential skills, concepts and knowledge embodied in the draft state model content standards for K-12 geography. The three model units included in Part 2 of the Framework provide a sample of the work produced by these design teams over the past year.

In spring 1995, each of the catalyst districts will "adopt" another school district, teaming up to develop additional standards-based units of instruction and providing inservice training that will create a "multiplier effect" within these and other districts.

We hope that this framework will serve as a useful guide for the important work that lies ahead of us: preparing students for living, working and learning in a changing world, and ensuring that all teachers have the skills and knowledge they will need to achieve that goal.

PART 1: EXPLORING STANDARDS

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Introduction

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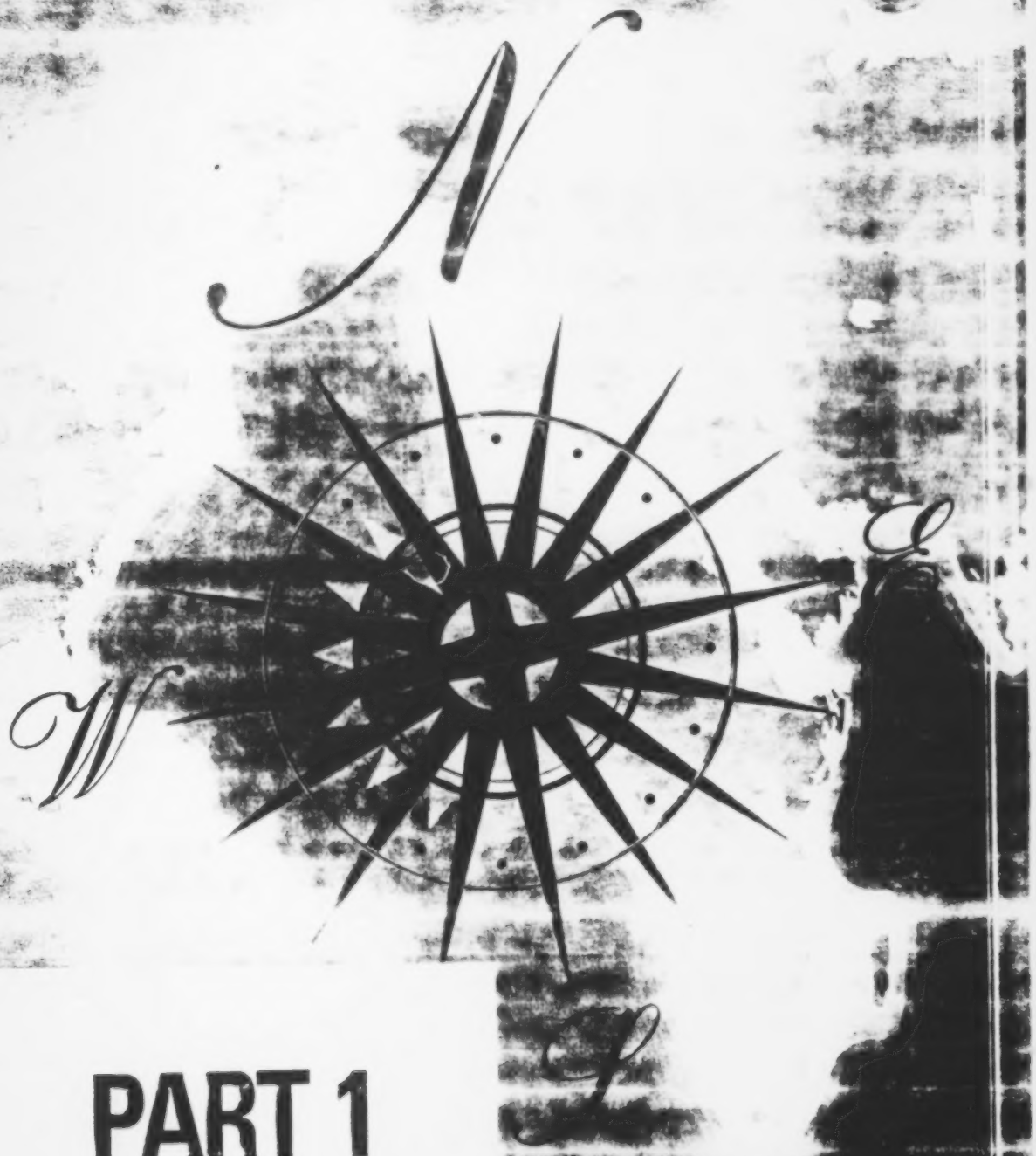

PART 1
Exploring Standards

Introduction	Section A
Colorado K-12 Geography Standards	Section B
Benchmarks	Section C
Geography Skills and Perspectives	Section D

Introduction

Here is your map. Unfold it, follow it, throw it away if you will. It is only paper and ink, but if you think a little, if you pause a moment, you will see that these two things have seldom joined to make a document so modest and yet so full with histories of hope or sagas of conquest.

— Beryl Markham,
West With the Night

The development of K-12 geography standards at the state and national level culminates a decade of change in geography education. This transformation began in the early 1980s amid growing concern on the part of educators, professionals and, according to national polls and surveys, the public at large about the gradual disappearance of geography from the K-12 curriculum.

These concerns led to several important developments. The first was the publication, in 1984, of a set of guidelines developed by the Association of American Geographers and the National Council for Geographic Education that provided K-12 teachers with five "fundamental themes" around which to design and organize geography instruction.

The following year, the National Geographic Society initiated a nationwide effort to strengthen and improve K-12 geography education through the establishment of state-based alliances providing a variety of programs and services for elementary, middle and high school geography teachers.

Most important, in the early 1990s educators and professional organizations joined forces to begin work on a comprehensive set of standards defining the geographic skills, knowledge and abilities considered essential to every student's education.

This initiative was part of a larger movement, at both the national and state level, to establish higher academic standards for students in the wake of the landmark 1983 report, *A Nation at Risk*, which warned of "a rising tide of mediocrity" in American public

education. Geography was one of seven subject areas for which federal funding was made available for the design and development of standards.

The geography-standards project began in July 1992 as a collaborative effort involving four organizations: the National Geographic Society, the National Council for Geographic Education, the American Geographical Society and the Association of American Geographers.

An oversight committee made up of legislators, business leaders, educators, parents and members of the national PTA met every six months to examine each set of draft standards and decide whether to release it for review. The project administrators held nine public hearings, each in a different city, and distributed more than 2,000 review copies to educators and professionals in the field. Drafts also went to 100 state social-studies and science coordinators, 750 geography teachers, government workers and business leaders.

The national standards were unveiled in October 1994. The 272-page document, *Geography for Life: National Geography Standards*, describes student learning for grades K-4, 5-8 and 9-12. At each grade level, students are expected to master the same 18 standards in six categories: the world in spatial terms, places and regions, physical systems, human systems, environment and society and the uses of geography. There are also five geographic skills with benchmarks for grades 4, 8 and 12: asking geographic questions, acquiring geographic information, organizing geographic information, analyzing geographic information and answering geographic questions.

At the same time, work was under way in several states to develop comprehensive standards along the lines of those being released at the national level in the various subject areas.

In Colorado, this effort was set in motion by the passage in 1993 of House Bill 1313, which set a deadline for school districts to establish standards defining what students should know and be able to do, at various points in their schooling, in reading/writing, math, science, history, geography, civics, art, music, physical education and foreign languages. Each school district was free to design and adopt its own standards, as long as they could be shown to "meet or exceed" a set of model standards to be developed by the state in each of the 10 content areas.

As you will see, the task force assigned to draft the model state standards for geography drew heavily on the ideas, concepts and strategies reflected in the national geography-standards document. In addition to designing the standards, which underwent extensive revision and review between October 1993 and June 1995, the Colorado Geography Task Force also developed model benchmarks, lessons, curriculum units and assessments to provide schools and districts with additional guidance and resources as they set about the challenging task of implementing the new standards.

Colorado's new K-12 geography standards, like those set forth at the national level, reflect an emphasis on geography as an integrative discipline that brings together the physical and human dimensions of the world in the study of people, places and environments. The goal is, as the preface to *Geography for Life* states, to produce "geographically informed citizens who understand and appreciate the interdependent worlds in which they live, and make sound judgments about their community, their state, their nation and the world."

At both the state and national level, the new geography standards reflect Americans' belief that geography education in the U.S. must be as rigorous and challenging as it is in other advanced countries. The quality and adaptability of our workforce, our ability to compete in a global economy, the wise and efficient management of our resources — all depend on our knowledge and understanding, both individually and collectively, of the world we live in.

According to a recent Gallup poll, 90% of American adults view geography education as a crucial ingredient in preparing young people for living, learning and working in a changing world. They believe geographic knowledge, skills and perspectives provide students with:

- An understanding of the dynamic connections between people and places.
- An appreciation of how people depend on, adapt to and affect the physical environment.
- An ability to use a variety of tools, resources and interdisciplinary skills in identifying, analyzing and solving problems in an increasingly complex world.

Geography is not about remote and scattered bits of information; it is about basic human concerns. Its subject matter is Earth's surface and the natural and

human processes that shape it, the relationships between people and environments, and the connections between people and places. Geography education goes beyond knowing information and concepts. Understanding how that knowledge can be viewed from different perspectives, used to solve multi-dimensional problems and used to make informed decisions is knowing geography in its fullest sense.

This section, Exploring Standards, examines the core of Colorado's newly established vision of K-12 geography education, the standards and benchmarks defining what every student is expected to know and be able to do at three key points in his or her schooling (4th, 8th and 11th grades) in order to be considered proficient in geography. Colorado's standards focus on six key knowledge and skill areas:

- Seeing the World Geographically
- Places and Regions
- Natural Systems
- Human Systems
- Environment and Society
- Uses of Geography

Colorado Model Content Standards for Geography

Introduction

Everything exists in space. Geography's* concern is space. Geography uses a spatial perspective* to study the location*, arrangement, and interaction of people, places*, and environments* over Earth's space*. By understanding and using the spatial perspective geography offers, students can study facts, issues and ideas in depth.

People everywhere have a need to know about the nature of their world, beginning with themselves. Therefore, geography has to do with both asking questions and solving problems, as well as memorization of facts. Geography is composed of three interrelated and inseparable components: knowledge, skills, and perspectives. Investigating the geographic dimension of human experience begins with asking the following:

- Where is it?
- Why is it there?
- How and why does it affect the people in this place?
- In what other places do people confront this issue?
- How and why are these places related?
- What alternatives do people have to improve their situation?

The answers to these and other questions constitute geography.

The Purpose of Geography Education

Geography education fosters the development of citizens who actively seek to apply the knowledge, perspectives, and skills of geography in life situations. Geography education must be responsive to meet the needs of students, as well as the societal and workplace requirements of the community, nation, and the world. Through rigorous instruction and an adaptable K-12 curriculum, geography education helps prepare students to cope with the complexities of contemporary life. Geography serves as the bridge between the physical and the social sciences. The study of geography should give students a firm grasp of the place and terrain that surrounds them; the patterns of human development around the world; and the interactions of peoples, places, and environments.

The need for geographic knowledge is increasing. Technological advances and greater international trading force citizens to have a fuller knowledge of economic, political, social, and environmental issues around the world. The increased economic power and initiatives of other nations, changes in international politics and policies, and the ability of other nations to affect worldwide environmental quality validate the need for United States' students to be internationally competent 21st-century voters, workers, parents, and leaders.

The Geographically Informed Person

These geography standards seek to foster the development of a geographically informed person. This means being knowledgeable about people, places, and environments, and being able to apply that knowledge. Geographically informed citizens understand the

* *A glossary of terms can be found on page B • 1.21 of this document. Examples given in this document are used to clarify terms and concepts but not to define or limit curriculum.*

many interdependent spheres in which they live, and make informed judgments to improve their community, state, country, and world. To meet the challenges of the future, a geographically informed citizen should be able to:

- Know and understand facts, concepts, and generalizations about geography;
- Apply geographic skills to observe, gather, organize, analyze and present information; and
- Use geographic perspectives to evaluate, make decisions about and report on issues, processes, and events.

Geography's Content Standards

The geography content standards that follow outline what students should know and be able to do. They integrate geographic knowledge, skills and perspectives that will remain useful throughout life. The essential skills of asking geographic questions; acquiring, presenting, and analyzing geographic information; and developing and testing geographic generalizations are reflected in the content standards and are worth practicing and mastering.

The geography standards are arranged in an orderly progression from conceptually simple to complex and from acquisition of basic knowledge to the synthesis and application of knowledge. They move from basic tools and locational information in Standard 1 to the fundamental concepts of physical and human geography in Standards 2-4. Then, Standard 5 brings the human and physical systems together to examine their interrelationships. Finally, content from Standards 1-5 is brought together and applied to practical problems in Standard 6.

NOTE: We wish to express our gratitude to the National Assessment Governing Board for providing us with the Geography Framework for the 1994 National Assessment of Educational Progress and the Geography Education Standards Project for Geography for Life. We have relied heavily on these works for the organizational themes and key ideas expressed in the Colorado Model Content Standards for Geography.

Colorado Model Content Standards for Geography

1. Students know how to use and construct maps, globes and other geographic tools* to locate and derive information about people, places and environments.

2. Students know the physical* and human characteristics* of places and use this knowledge to define and study regions* and their patterns of change.

3. Students understand how physical processes* shape Earth's* surface patterns* and systems*.

4. Students understand how economic, political, cultural and social processes* interact to shape patterns of human populations, interdependence*, cooperation and conflict.

5. Students understand the effects of interactions between human* and physical systems* and the changes in meaning, use, distribution* and importance of resources*.

6. Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

** A glossary of terms can be found on page B • 1.21 of this document. Examples given in this document are used to clarify terms and concepts but not to define or limit curriculum.*

Standard 1

Students know how to use and construct maps, globes, and other geographic tools to locate and derive information about people, places and environments.

Rationale

Seeing the world geographically requires an understanding of various tools to be able to interpret and make maps; recognize relationships in and between places; make generalizations; and understand the concepts of distance, direction, location, connection, and association. These abilities and concepts are basic to what makes geography unique — the spatial perspective.

Maps, globes, photographs, satellite images*, and geographic information systems* (GIS) are examples of geographic tools. They are essential to portraying, analyzing, evaluating, and predicting human and physical patterns and processes on Earth's surface. They play a critical role in helping people make sense of a complex world, and they improve human capacity to move about and plan activities.

Developing locational knowledge — for example, knowing where places are and why they are there — is also a part of being a geographically informed person. Locational knowledge is developed through both academic learning and personal experience. This knowledge, developed through factual learning, serves as a personal framework for objective and personal geographic knowledge. Geographic images and the impressions students have of places are organized by these personal frameworks.

Geographic literacy also demands an understanding of how space on Earth is organized. To understand spatial organization* requires observation and analysis as well as an awareness that the patterns observed on Earth's surface reflect geographic processes.

The concepts of distance, direction, location, connection, and association help explain how space is arranged on Earth. Other geographic concepts explain the size and locations of settlements, the connections or lack of connections between and among locations, and the interchange of people, ideas, and goods .

Standard 1.1

Part 1 Colorado Model Content Standards for Geography

Students know how to use maps, globes and other geographic tools to acquire, process and report information from a spatial perspective.

Grades K-4

In grades K-4, what students know and are able to do includes:

- identifying the characteristics and purposes of maps, globes, and other geographic tools;
- reading and interpreting information from photographs, maps, globes, graphs, models, and computer programs, if available; and
- displaying information on maps, globes, and geographic models*, and in graphs, diagrams, and charts (for example; designing map keys* and legends*).

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- explaining the characteristics and purposes of and explaining differences among maps, globes, aerial photographs*, geographic models and satellite images;
- identifying several basic types of map projections* (for example, Mercator* and Robinson Projections*); and
- interpreting and constructing maps, globes, models, charts and geographic databases*.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- selecting appropriate maps, map projections and other graphic representations to analyze geographic problems;
- constructing maps using fundamental cartographic* principles including translating narratives about places and events into graphic representations;
- interpreting maps and other geographic tools, through the analysis of case studies and using data; and
- using geographic tools to represent and interpret Earth's physical and human systems.

STANDARD 1.2

Students develop knowledge of Earth to locate people, places and environments.

Grades K-4

In grades K-4, what students know and are able to do includes:

- identifying major geographic features;
- locating places within their own and nearby communities in Colorado;
- locating Colorado in relation to the U.S. and the rest of the world;
- drawing a map of continents and oceans; and
- identifying a specific location on a map using grids.

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- identifying and locating each of the fifty states in the United States;
- drawing an accurate map from memory to answer questions about the location of physical and human features* (for example, given an incomplete map of Europe and Africa, sketch in the borders of the countries around the Mediterranean Sea);
- identifying and locating physical and human features in their own and nearby communities, in the United States, and in regions of the world; and
- locating places using latitude* and longitude*.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- drawing a complex and accurate map from memory to answer questions about the location of human and physical features;
- identifying and locating physical and human features in their own and nearby communities, in the United States, and in regions of the world (for example, rivers, mountains, regions, and countries); and
- analyzing maps people make from memory of the same place to determine similarities and differences.

STANDARD 1.3

Students know how to analyze the dynamic spatial organization of people, places and environments.

Grades K-4

In grades K-4, what students know and are able to do includes:

- defining basic geographic vocabulary such as the concepts of location, direction, distance, scale*, movement and region using appropriate words and diagrams;
- describing how places are connected by the movement* of goods and services, ideas and people; and
- making and defending locational decisions for human activity (for example, where one would locate a new piece of playground equipment).

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- explaining fundamental geographic vocabulary such as the concepts of distance, latitude, longitude, interdependence, accessibility*, and connections;
- analyzing the factors affecting the location of human activities (for example, the location of a planned development or dam);
- explaining different land use* patterns in urban, suburban, and rural areas;
- describing patterns and processes of diffusion* (for example, information networks around the world); and
- solving locational questions requiring the integration of information from two or more sources.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- analyzing geographic information using a variety of scales — local, national, international (for example, growth issues in Limon, New York City, and Southeast Asia);
- analyzing patterns of distribution and arrangement of settlements; and
- analyzing patterns and processes of the diffusion of human activities

Standard 2

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

Rationale

Knowledge of place helps people make informed decisions about where to live, work, travel, and seek new opportunities. Places form and change as a result of physical and human processes. The physical characteristics of a place are caused by the long term interaction among natural processes*. These processes produce the landforms*, water bodies, air, soils, vegetation, animal life, and climate* on which human life depends. The human characteristics of a place result from the interaction of human processes. These processes produce particular settlement patterns*, political systems, architecture, commerce, and other activities and enterprises.

Regions are areas that display similarity in terms of selected criteria. Regions are created to clarify the complexity of human and physical features on Earth's surface. Regions are geographic generalizations that portray broader patterns from great and oftentimes confusing detail. Studying how and why regions change helps people understand and interpret the past, participate responsibly in the present, and plan effectively for the future.

The way people think about places and regions varies according to how they organize, interpret, and use information. Personal attitudes, experiences, and judgements are important in shaping these variations. Differences in cultural background, age, gender, and experiences contribute to the perceptions people have about places and regions. Understanding places and regions helps one appreciate different perspectives and develop the cooperation needed to resolve conflict.

Standard 2.1

Students know the physical and human characteristics of places.

Grades K-4

In grades K-4, what students know and are able to do includes:

- identifying and classifying the characteristics of places as human or physical; and
- describing how human and physical processes together shape places (for example, reforestation may prevent erosion* on slopes in Colorado).

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- describing human and physical characteristics of places; and
- explaining how places change due to human activity (for example, center-pivot technology* produces a distinctive pattern of irrigation on the High Plains).

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Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- analyzing the human and physical characteristics that give a place meaning and significance; and
- describing the changing human and physical characteristics of places.

STANDARD 2.2

Students know how and why people define regions.

Grades K-4

In grades K-4, what students know and are able to do includes:

- identifying a region as an area with unifying geographic characteristics; and
- describing similarities, differences and patterns of change in regions.

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- identifying a region by defining its distinguishing characteristics;
- explaining how and why regions change;
- describing the relationships and interactions among regions; and
- analyzing the influences and effects of regional labels and images (for example, the Sun Belt attract tourists, retirees, and new businesses).

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- applying the concept of region to organize the study of a geographic issue using multiple criteria; and
- analyzing changes in regions and recognizing the patterns of those changes (for example, the Caribbean Basin's transition from a major sugarcane producer to a center for tourism).

STANDARD 2.3

Students know how culture* and experience influence people's perceptions of places and regions.

Grades K-4

In grades K-4, what students know and are able to do includes:

- identifying ways in which different people view and relate to places and regions.

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- describing various perspectives associated with places and regions;
- explaining how culture and technology affect perception* of places and regions (for example, U.S. television programs and movies present images of the U.S. to billions of people around the world) ; and
- explaining how places and regions serve as cultural symbols (for example, Jerusalem as a sacred place* for Christian, Jews, and Muslims).

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- analyzing why places and regions are important to human identity;
- comparing and contrasting how and why different groups in society view places and regions differently; and
- analyzing the ways places and regions reflect cultural change (for example, old mining towns become tourist centers).

Standard 3

Students understand how physical processes shape Earth's surface patterns and systems.

Rationale

Processes of nature create the natural environments upon which human life depends. Understanding Earth's natural or physical features and the processes that produce them is essential to the study of human life on Earth. It is therefore essential to know the characteristics of landforms, soils, water bodies, vegetation, animal life, weather, and climate and how these characteristics are distributed over Earth's surface.

There are a variety of physical processes, such as weathering*, erosion, and vegetation change, that shape the environment over time and space. These processes and their associated patterns can be explained by concepts such as system, boundary*, force, threshold*, and equilibrium*.

Climates, landforms, and soils are physical systems. An ecosystem — a complex physical system — is an interdependent association of plants, animals, air, water and land. Ecosystems form distinct regions within the biosphere* that vary in size, shape, and complexity. Understanding the nature and distribution of ecosystems and the influences of physical processes throughout the environment is crucial to understanding the role of humans within the physical world.

Standard 3.1

Students know the physical processes that shape Earth's surface patterns.

Grades K-4

In grades K-4, what students know and are able to do includes:

- identifying the components of Earth's physical systems and their characteristics (for example, air, land, water, plants, and animals and their features);
- explaining how Earth-Sun relationships* shape climate and vegetation patterns (for example, as compared with other regions, polar regions receive low amounts of sun's energy and thus support little vegetation); and
- describing how features on Earth's surface are shaped by physical processes (for example, wet regions have many rivers).

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- describing how physical processes shape environmental patterns of air, land, water, plants, and animals;
- explaining how physical processes influence the formation and location of resources;

- describing the consequences of physical processes on Earth's surface (for example, tropical ocean heating supplies energy for hurricanes); and
- explaining how Earth-Sun relationships produce day and night, time zones, seasons and major climatic variations.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- identifying the dynamics of the four basic components of Earth's physical systems: the atmosphere*, biosphere, lithosphere*, and hydrosphere*;
- explaining the interaction of Earth's physical systems (for example, the interaction of climate and ocean water as exemplified by El Niño); and
- explaining the variation in the effects of physical processes across Earth's surface (for example, the effects of wind variations in shaping landforms).

STANDARD 3.2

Students know the characteristics and distributions of physical systems of land, air, water, plants and animals.

Grades K-4

In grades K-4, what students know and are able to do includes:

- identifying characteristics of physical systems (for example, water cycle);
- describing local environmental features and identifying the physical system to which they belong (for example, a lake which is part of the water cycle); and
- comparing patterns and distribution of environments within a physical system (for example, groups of plant and animal life found in Colorado).

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- identifying the local and world patterns of ecosystems*; and
- describing how ecosystems work.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- explaining the factors that affect the distribution and characteristics of ecosystems;
- explaining the importance of ecosystems in understanding the environment; and
- analyzing the diversity and productivity of ecosystems.

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Standard 4

Students understand how economic, political, cultural, and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

Rationale

People are central to geography in that human activities help shape Earth's surface. Human settlements and structures are part of Earth's surface, and humans compete for control of Earth's surface. The geographic study of human populations focuses on location, movement, and the dynamics of size. Populations tend to locate in clusters rather than spread out evenly over the land surface; these patterns depend on both physical and human environments. People make long-term, permanent migrations and short-term, temporary journeys, often on a daily basis. Migration is often the result of the way people perceive a place. Population growth, decline, and equilibrium patterns are influenced by medical, cultural, and economic issues.

Culture defines every human society because it encompasses identity, purpose, place, and vision. Culture has meaning beyond a single group in a specific place. The study of the locations, spatial patterns, and processes of cultures provides a means to analyze how people interact with each other and with their environments. Culture is a force that can both unify and impede connections and communication among peoples.

In the developed, urbanized, and industrialized countries, economic systems are complex, fast-moving, and technologically dependent. Developing countries have vast, unstructured urban areas surrounded by traditionally based rural areas. But economic interdependence links the developed and developing countries.

Settlements, whether rural or urban, have many identifiable patterns, such as architecture, sacred space, and economic activities. Settlement patterns reflect changing cultural attitudes toward place as well as shifts in technology, population, and resource use.

Earth space is divided into political, economic, social, and cultural spaces, ranging in scale from local to global. Political spaces, which are created by both cooperation and conflict, may be as small as the school attendance zone or as large as an alliance among nations. Economic space includes a firm's marketing regions and international trading blocs. Social and cultural spaces range from households to the administrative regions of world religions. The partitioning of space into social, economic, and political spheres of influence is dynamic and ongoing.

Standard 4.1

Students know the characteristics, location, distribution and migration of human populations.

Grades K-4

In grades K-4, what students know and are able to do includes:

- identifying the distribution of population, both locally and in other parts of the world;

- identifying the characteristics of populations, both locally and in other parts of the world; and
- identifying the causes of human migration.

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- describing the demographic* structure of a population (for example, the age-sex structure as shown in a population pyramid*);
- explaining reasons for variation in population distribution; and
- analyzing the causes and types of human migration and its effect on places.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- evaluating trends and effects of world population numbers and patterns; and
- analyzing the physical and cultural impact of human migration.

STANDARD 4.2

Students know the nature and spatial distribution* of cultural patterns.

Grades K-4

In grades K-4, what students know and are able to do includes:

- identifying how the elements of culture affect the ways in which people live; and
- describing how patterns of culture vary across Earth's surface (for example, using thematic maps* to show patterns of language, religion, and housing types in a community).

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- explaining the spatial distribution of cultures, both locally and in other parts of the world;
- describing how cultures and cultural landscapes* change; and
- comparing and contrasting elements of different cultural landscapes.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- analyzing how cultures shape the character of a region;
- describing the processes of cultural diffusion*; and
- describing the effect of technology on the development and change of cultures.

STANDARD 4.3

Students know the patterns and networks of economic interdependence.

Grades K-4

In grades K-4, what students know and are able to do includes:

- identifying the location and distribution of major economic activities in Colorado; and
- describing economic networks used in daily life (for example, transportation and communication networks).

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- identifying the factors that influence the location and distribution of economic activities;
- explaining why and how countries trade goods and services;
- explaining reasons for patterns of economic activities on Earth's surface; and
- explaining how changes in technology, transportation, communication, and resources affect the location of economic activities.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- comparing and contrasting the characteristics and distribution of economic systems;
- explaining how places of various size function as centers of economic activity;
- analyzing factors influencing economic interdependence of countries, including world trade;
- analyzing connections among local, regional, and world economies (for example, transportation routes, movement patterns, and market areas); and
- analyzing how and why levels of economic development vary among places.

STANDARD 4.4

Students know the processes, patterns and functions of human settlement.

Grades K-4

In grades K-4, what students know and are able to do includes:

- classifying the types and patterns of settlements;
- identifying the factors that affect where people settle (for example, the availability of transportation and resources); and
- describing the spatial characteristics of cities (for example, residential, recreational, central business district, industrial, commercial areas).

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- explaining the causes and effects of urbanization* (for example, rural-to-urban migration leads to urbanization); and
- describing, locating, and comparing different settlement patterns throughout the world.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- analyzing the size, arrangement, structure and function of urban areas;
- comparing and contrasting the differing characteristics of settlement in developing and developed countries; and
- examining how and why large cities grow together.

STANDARD 4.5

Students know how cooperation and conflict among people influence the division and control of Earth's surface.

Grades K-4

In grades K-4, what students know and are able to do includes:

- describing how and why people create boundaries; and
- describing how cooperation and conflict affect neighborhoods and communities.

Grades 5-8

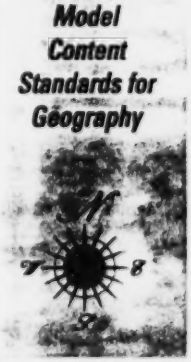
As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- describing how cooperation and conflict among people contribute to political, economic, and social divisions of Earth's surface; and
- describing the forces and processes of cooperation that unite people across Earth's surface (for example, the nations of Western Europe have joined together in the European Union).

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- analyzing why and how cooperation and conflict are involved in shaping the distribution of social, political, and economic spaces on Earth at different scales — local, national, and international; and
- analyzing how differing points of view and self-interests play a role in conflict over territory and resources.



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Standard 5

Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution and importance of resources.

Rationale

Human use of resources can have both positive and negative effects. Increasingly, people are called upon to solve complex problems resulting from the interaction of human and physical systems. Physical systems offer opportunities and constraints for human activity. Humans control and use the output of physical systems — natural resources — to get food and shelter needed to survive and prosper; natural resources provide food and shelter. Agriculture, the foundation of civilizations, is perhaps the most massive alteration of physical systems. Humans sometimes face the consequences of exceeding their environment's capacity and resource base. Changes to the environment created by humans play a significant role in shaping local, global, economic, social, and political conditions.

The concept of resources has changed over time in much of the world. Initially, when populations were smaller, resources were assumed to exist in abundance and were available for almost limitless use. The concept of preservation did not evolve until some resources appeared to be in short supply. Unwise resource use can negatively affect the environment and quality of life. Responsible resource use can enhance the environment and quality of life.

Humans interact with the environment through technology. Technology has enabled us to use some natural resources at ever-increasing, possibly unsustainable, rates. But new technologies also change our perception of resources. For example, nuclear reactors now generate a substantial portion of the world's electricity and once-discarded materials are now recycled.

Standards 5.1

Students know how human actions modify the physical environment.

Grades K-4

In grades K-4, what students know and are able to do includes:

- identifying how people depend upon, adapt to and modify the physical environment.

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- describing how human modifications of physical environments in one place often lead to changes in other places;
- explaining the role of technology in the human modification of the physical environment (for example, damming of the Colorado river, greening of the Negev Desert in Israel); and

- describing ways that humans depend upon, adapt to and affect the physical environment.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- analyzing ways the humans depend upon, adapt to and affect the physical environment.
- evaluating ways in which technology has expanded human capacity to modify the physical environment; and
- explaining the possible global effects of human modification of the physical environment.

STANDARDS 5.2

Students know how physical systems affect human systems.

Grades K-4

In grades K-4, what students know and are able to do includes:

- describing how the physical environment provides opportunities for and places constraint on human activities.

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- explaining how the characteristics of different physical environments provide opportunities for or place constraints on human activities; and
- describing how natural hazards* affect human activities.

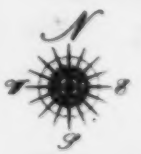
Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- comparing and contrasting how changes in the physical environment can increase or diminish its capacity to support human activity;
- identifying and evaluating alternative strategies to respond to constraints placed on human systems by the physical environment (for example, the use of irrigation in arid environments); and
- analyzing how humans perceive and react to natural hazards.

STANDARD 5.3

Students know the changes that occur in the meaning, use, location, distribution and importance of resources.



Grades K-4

In grades K-4, what students know and are able to do includes:

- describing the role of resources in daily life (for example, discussing the recycling of materials);
- identifying the characteristics of renewable* and nonrenewable resources*; and
- identifying the spatial distribution of resources.

Grades 5-8

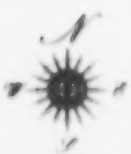
As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- describing the role of resources in daily life (for example, discussing the recycling of materials);
- describing the worldwide distribution and use of resources;
- identifying how technology affects the definition of, access to and use of resources;
- describing why people have different viewpoints with respect to resource use;
- explaining the fundamental role of energy resources; and
- describing ways that resources can be recycled.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- analyzing how the changing distribution of resources affects the patterns of settlement;
- evaluating policies and programs for resource use and management; and
- analyzing the effects of economic activity in modifying and transforming resources.



Standard 6

Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

Rationale

This standard deals with the application of geographic knowledge, skills, and perspectives to practical problems. Everything happens in time and space. Therefore, a thorough interpretation of the past must include the geographic context of the event. This requires addressing questions such as: Where did the event occur? In what kind of human and physical environment did it happen? How was the event related to events in other places? What resources and technologies did people have? How did they move from place to place? What environmental constraints did they face? Any interpretation of human events and conditions that ignores the geographic context is incomplete and unrealistic.

In the next century, humans will face many complex and controversial issues concerning the development needs of a rapidly growing human population and the Earth's ability to sustain that population. To cope with these fundamental issues effectively, tomorrow's citizens must be geographically informed.

Standard 6.1

Students know how to apply geography to understand the past.

Grades K-4

In grades K-4, what students know and are able to do includes:

- describing how places change over time; and
- describing how places and environments may have influenced people and events over time.

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- describing changes in the spatial organization of a society over time;
- describing how places and environments have influenced events and conditions in the past; and
- explaining how differing perceptions of places, people and resources have affected events and conditions in the past.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- analyzing how changing perceptions of places and environments affect the behavior of

people; and

- analyzing the fundamental role that places and environments have played in history (for example, the Russian winter played an important part in the defeat of Napoleon's army).

STANDARD 6.2

Students know how to apply geography to understand the present and plan for the future.

Grades K-4

In grades K-4, what students know and are able to do include:

- describing issues in communities from a spatial perspective; and
- identifying personal behaviors that can affect community planning.

Grades 5-8

As students in grades 5-8 extend their knowledge, what they know and are able to do includes:

- explaining issues in communities from a spatial perspective; and
- explaining a contemporary issue using geographic knowledge, skill and perspectives.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes:

- evaluating a contemporary issue using geography knowledge, skills, and perspectives; and
- comparing and contrasting how different viewpoints influence the development of policies designed to use and manage Earth's resources.

Glossary

Accessibility — the relative ease with which a place can be reached from other places.

Aerial (air) photograph — a photograph of part of Earth's surface usually taken from an airplane.

Atmosphere — the envelope of gases, aerosols, and other materials that surrounds Earth and is held close by gravity. The gases are dominated by nitrogen, oxygen, argon, and carbon dioxide and include much smaller percentages of helium, methane, and hydrogen.

Biosphere — the realm of Earth that includes all plant and animal life forms.

Boundary — the limit or extent within which a system exists or functions, including a social group, a state, or physical feature.

Cartographic — pertaining to the design and creation of maps and other geographic representations.

Case study — the in-depth examination of a geographic issue in a particular place.

Climate — long-term trends in weather elements and atmospheric conditions.

Center-pivot irrigation — the use of large sprinklers that distribute irrigation water in a circle, which results in large circular irrigated field patterns.

Connections — linkages between places.

Culture — learned behavior of people, which includes their belief systems and languages, their social relationships, their institutions and organizations, and their material goods — food, clothing, buildings, tools, and machines.

Cultural diffusion — the spread of cultural elements from one culture to another.

Cultural landscape — the human imprint on the physical environment; the humanized landscape as created or modified by people.

Database — a compilation, structuring, and categorization of information (print or electronic) for analysis and interpretation.

Demographic — pertaining to the study of population statistics, changes, and trends based on various measures of fertility (adding to a population), mortality (subtracting from a population), and migration (redistribution of a population).

Diffusion — the spread of people, ideas, technology, and products among places.

Distribution — the arrangement of items over a specified area (synonymous with spatial distributions).

Earth — when capitalized, this refers to the planet named Earth.

Earth space (see spatial) — the spatial dimension of Earth's surface, the study of which is called geography. The term is used in contrast with the popular term "space", which refers to outer space (away from Earth).

Earth-Sun relations — the study of the relationships between the Sun and the Earth, which explains day and night, seasons, and major climatic variations on Earth.

Ecosystem (ecological system) — a system formed by the interaction of all living organisms (plants, animals, humans) with each other and with the physical and chemical factors of the environment in which they live.

Environment — everything in and on Earth's surface and its atmosphere within which organisms, communities, or objects exist. The natural or physical environment refers to those aspects of the environment produced by natural or physical processes; the human or cultural environment refers to those aspects of the environment produced by human or cultural processes.

Equilibrium — the point in the operation of a system when driving forces and resisting forces are in balance.

Erosion — the wearing away of parts of Earth's surface by natural forces of wind, water, and ice. Human use of the land can have a major effect on the rate of erosion.

Geographic Information System (GIS) — a geographic database that contains information about the distribution of physical and human characteristics of places or areas. In order to test hypotheses, maps of one characteristic or combination can be produced from the database to analyze the data relationships.

Geographic model — an idealized, simplified representation that seeks to portray or explain a particular geographic reality.

Geographic tool — a device used to compile, organize, manipulate, store, report, or display geographic information, including maps, globes, graphs, diagrams, aerial and other photographs, satellite-produced images, geographic information systems, and computer databases as well as other software.

Geography — the science and art of describing, analyzing, explaining, and interpreting the Earth as the home of human beings; geography places special emphasis on the spatial relations of society and the physical or natural environment.

Human characteristics — features and patterns of features on Earth's surface created by humans, including dwellings, crops, roads, machines, places of worship, and other cultural elements.

Human features — features and patterns of features on Earth's surface created by humans, including dwellings, crops, roads, machines, places of worship, and other cultural elements.

Human process — a course or method of operation that produces, maintains, and alters human systems on Earth, such as migration or diffusion.

Human system — a collection of human entities that are linked and interrelated, such as a city, an airport, or a transportation network.

Hydrosphere — the water realm of Earth, which includes water contained in the oceans, lakes, rivers, ground, glaciers, and water vapor in the atmosphere.

Interdependence — people relying on each other in different places or in the same place for ideas, goods, and services.

Land use — the range of uses of Earth's surface made by humans. Uses are classified as urban, rural, agricultural, forested, etc., with more specific subclassifications useful for specific purposes (for example, low-density residential, light industrial, nursery crops).

Landform — the shape, form, or nature of a specific physical feature of Earth's surface (for example, plain, hill, plateau, mountain).

Latitude — assuming that the Earth is a sphere, the latitude of a point on the surface is the angle measured at the center of the Earth between a ray lying on the plane of the Equator and a line connecting the center with the point on the surface.

Legend — synonymous with map key.

Lithosphere — the uppermost portion of the solid Earth, including soil, land, and geologic formations.

Location — the position of a point on Earth's surface expressed by means of a grid (absolute) or in relation (relative) to the position of other places.

Longitude — the position of a point on Earth's surface expressed as its angular distance, east or west, from the prime meridian to 180 degrees.

Map key — an explanatory description or legend to features on a map or chart.

Map projections — a mathematical formula by which the lines of a global grid and the shapes of land and water bodies are transferred from a globe to a flat surface.

Mercator projection — devised by Gerhard Mercator for his world map in 1569, this projection has the parallels and meridians as straight lines intersecting at right angles. Its main advantage is that lines of constant direction are straight lines, so that it is used widely for navigation; its major disadvantage is that the size of areas becomes increasingly exaggerated toward the poles.

Movement — in geography, the interaction across Earth space that connects places. This interaction occurs with flows of human phenomena, such as goods, people, and ideas, and with natural phenomena such as winds, rivers, and ocean currents.

Natural hazard — an event in the physical environment, such as a hurricane or earthquake, that is destructive to human life and property.

Natural process — synonymous with physical process.

Nonrenewable resources — a finite resource that cannot be replaced once it is used (for example, petroleum, minerals).

Perception — the feelings, attitudes, and images people have of different places, peoples, and environments. The images people have in their heads of where places are located are called perceptual or mental maps.

Physical characteristics — features and patterns of features on Earth's surface caused by physical or natural processes, such as landforms, vegetation, and atmospheric phenomena.

Physical /natural process — a course or method of operation that produces, maintains, or alters Earth's physical systems, such as glacial processes eroding and depositing landforms.

Physical /natural systems — climates, landforms, and soils are examples of natural or physical systems. For a more complete definition of physical systems, refer to the rationale statement on page thirteen.

Places — locations having distinctive characteristics which give them meaning and character and distinguish them from other locations.

Population pyramid — a bar graph showing the distribution by gender and age of a country's population.

Region — an area with one or more common characteristics or features, which give it a measure of homogeneity and make it different from surrounding areas.

Renewable resource — a resource that can be regenerated if used carefully (for example, fish, timber.)

Resource — an aspect of the physical environment that people value and use to meet a need for fuel, food, industrial product, or something else of value.

Robinson projection — developed by Arthur Robinson in 1963, this projection has the parallels as straight lines; the central meridian is a straight line but the others are arcs. No point is completely free of distortion, which increases toward the poles. It is widely used for thematic world maps.

Sacred place — an area recognized by a group of people to have religious significance.

Satellite Image — an image produced by a variety of sensors, such as radar, microwave detectors, and scanners, which measure and record electromagnetic radiation. The collected data are turned into digital form for transmission to ground receiving stations. The data can be reconverted into imagery in a form resembling a photograph.

Scale — on maps, the relationship or ratio between a linear measurement on a map and the corresponding distance on Earth's surface. For example, the scale 1:1,000,000 means that one unit (inch or centimeter) on the map and represents 1,000,000 similar units on Earth's surface. The term small scale sometimes refers to the study of small areas.

Settlement pattern — the spatial distribution and arrangement of human habitations, including rural and urban centers.

Social process — a course or method of operation that produces, maintains, or alters human systems on Earth, such as migration or diffusion. Synonymous with human process and cultural process.

Spatial — pertains to space on Earth's surface; refers to distances, directions, areas and other aspects of space.

Spatial distribution — the location shown on a map of a set of human or physical features that represents an aspect of a specified phenomenon within an area, for example, the set of locations of all two-story houses built between 1930 and 1940 in Denver.

Spatial perspective — the point of view that emphasizes the essential issue of place — embodied in specific questions such as Where is it? Why is it there? — as a fundamental dimension of human experience.

Spatial organization — the mode in which Earth space is structured by or implicated in the operation of social and/or physical processes.

Surface pattern — the real or geometric arrangement of the human and/or physical features in an area on or near Earth's surface, as in the pattern of a spatial distribution.

System — a collection of entities that are linked and interrelated, such as hydrologic cycle, cities, and transportation modes.

Technology — application of knowledge to meet the goals, goods, and services needed and desired by people.

Thematic map — a map representing a specific spatial distribution, theme, or topic (for example, population density, cattle production, or climates of the world).

Threshold — in physical and environmental processes, the point in the operation of a system when a jump or relatively great change occurs in response to a minor input; in an economic context, the minimum population needed for a service (for example, an auto dealer) to locate in a central place.

Urbanization — a process in which there is an increase in the percentage of people living/working in urban places as compared to rural places.

Weathering — the breaking down, disintegration, or dissolving of Earth's surface and subsurface rocks and minerals by physical, chemical, and organic process.

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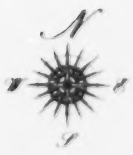
Benchmarks



Section C

Part 1
Benchmarks

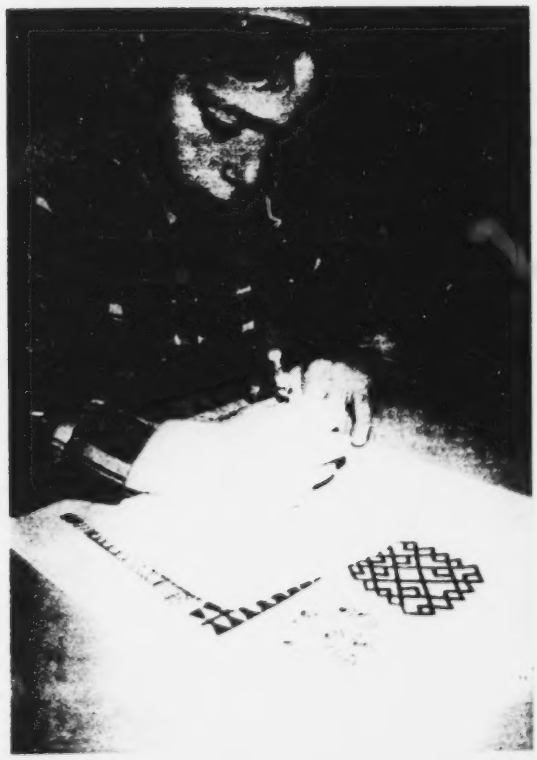
Developmental Profile of Grade Level K-1 Student

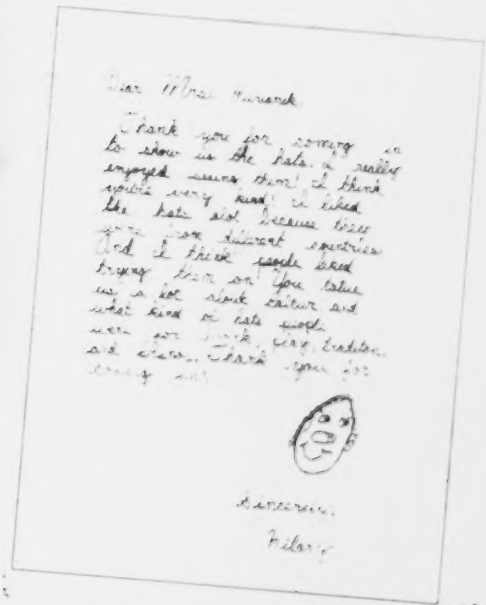
GRADE LEVEL K-1

Grade-Level K-1 students can:

- Use personal experiences and stories to gather and record information about society and environment
- Identify stages in people's lives and record sequence in displays, discussion, drawing
- Retell stories about important events
- Identify natural and built features of places
- Take part in simple routines to help care for places and animals
- Identify elements of natural systems
- Relate how natural systems can meet essential needs
- Relate what they know about diverse cultural origins among peoples
- Identify the resources they use to meet needs
- Take part in managing group resources

C • 1.1





Part 1 Benchmarks

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GRADE LEVEL K-1

C • 1.2

STANDARD 1

SEEING THE WORLD GEOGRAPHICALLY

Students know how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.

1.1 Students know how to use maps, globes and other geographic tools to acquire, process and report information from a spatial perspective.

Demonstrated, for example, when students:

- Identify and interpret the basic elements of maps (title and cardinal directions).

1.2 Students develop knowledge of Earth to locate people, places and environments.

Demonstrated, for example, when students:

- Identify land and water on maps and globes.
- Trace on a map the movement of the characters in a story (e.g., *Little Red Riding Hood's* path, or the ducks in *Make Way for Ducklings*).

1.3 Students know how to analyze the dynamic spatial organization of people, places and environments.

Demonstrated, for example, when students:

- Make a three-dimensional chart by tacking counters to display geographic data (e.g., chart how each child comes to school — car, walk, bus — using cubes).
- Identify local community or school features on a prepared map.

STANDARD 2

PLACES AND REGIONS

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

2.1 Students know the physical and human characteristics of places.

Demonstrated, for example, when students:

- Observe and describe a place (e.g., school, house, playground).

2.2 Students know how and why people define regions.

Demonstrated, for example, when students:

- Compare and contrast own neighborhood/family with one in another part of the city.
- Identify regions that are alike and different (e.g., neighborhoods, parks, industrial areas).

2.3 Students know how culture and experience influence people's perceptions of places and regions.

Demonstrated, for example, when students:

- Draw a picture of the neighborhood and describe perceptions of that neighborhood.

STANDARD 3

NATURAL SYSTEMS

Students understand how physical processes shape Earth's surface patterns and systems.

3.1 Students know the physical processes that shape Earth's surface patterns.

Demonstrated, for example, when students can:

- Act out the movement of earth's rotation to show day and night (using a flashlight to act as the sun).
- Tell how people affect the environment and do a class project to help in the neighborhood (e.g., pick up litter).

3.2 Students know the characteristics and distributions of physical systems of land, air, water, plants and animals.

Demonstrated, for example, when students:

- Dramatize the different parts of the water cycle using hand and body movements.
- Place drawings of plants and animals on the proper ecosystems.

Part 1
Benchmarks

STANDARD 4

HUMAN SYSTEMS

Students understand how economic, political, cultural and social processes interact to shape patterns of human populations: interdependence, cooperation and conflict.

4.1 Students know the characteristics, location, distribution and migration of human populations.

Demonstrated, for example, when students:

- Make a class neighborhood map and show where each child lives on it and discuss reasons why people live where they do.

4.2 Students know the nature and spatial distribution of cultural patterns.

Demonstrated, for example, when students:

- Compare and contrast different cultures by trying different foods, costumes and songs of other cultures.
- Compare physical and cultural traits of individuals in class, school and other places.

4.3 Students know the patterns and networks of economic interdependence.

Demonstrated, for example, when students:

- Describe ways in which people satisfy basic needs by using a map to show where clothes, food and other items come from (e.g., the origins of a pencil or a Hershey bar).
- List methods of transportation and communication used by families.
- Identify places where their families acquire basic goods/services.

4.4 Students know the processes, patterns and functions of human settlement.

Demonstrated, for example, when students:

- Read stories or poems about a community unlike that of the student (e.g., an urban community if the student lives in a rural area). Summarize similarities and differences on a chart.

4.5 Students know how cooperation and conflict among people influence the division and control of Earth's surface.

Demonstrated, for example, when students:

- Write a language experience story about ways that people solve problems by cooperating (e.g., working in groups to pick up trash, recycling).

STANDARD 5

ENVIRONMENT AND SOCIETY

Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution and importance of resources.

5.1 Students know how human actions modify the physical environment.

Demonstrated, for example, when students:

- Prepare a group chart to describe ways in which people depend on the physical environment and identify resources used in the school, community and region.
- Identify methods of adapting to physical and human characteristics of places (e.g., dress, home, transportation).

5.2 Students know how physical systems affect human systems.

Demonstrated, for example, when students:

- Identify ways the physical environment constrains or provides activities in the community, region and state on a daily, seasonal and permanent basis (e.g., recreational activities, agriculture, availability of water, expansion of settlement).
- Create lists of ways to clean up their immediate environment and use the recycling bins at school.
- Develop an understanding of what activities are necessary to ensure the proper treatment of animals.
- Identify the impact of human activity on different areas of the playground.

5.3 Students know the changes that occur in the meaning, use, location, distribution and importance of resources.

Demonstrated, for example, when students:

- Write a group poem or play that focuses on ways to conserve natural resources.
- List some of our natural resources and give examples of what can be recycled.
- Identify some recyclable materials found at school.

STANDARD 6

USES OF GEOGRAPHY

Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

6.1 Students know how to apply geography to understand the past.

Demonstrated, for example, when students:

- Arrange in chronological order pictures of types of houses in student's region and explain why they have changed over time (e.g., migration patterns, demographics and economic conditions).

6.2 Students know how to apply geography to understand the present and plan for the future.

Demonstrated, for example, when students:

- Make a visual display of school population (how many boys, girls in class) week by week for a month to show changes in school population.

GRADE LEVEL K-1

C> 1.3

Part 1 Benchmarks

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GRADE LEVEL K-1

Maps and Globes — What Do They Show?

by Nancy Hurianek, Social Studies Coordinator
St. Vrain Valley School District

Tasks:

- The class works together to assemble a model of the classroom.
- Play a march and lead the children on a march around and through the room. Ask the children to pay particular attention to where things are located in the room.
- When the children return to the front of the room, place large sheet of paper in the center of the group area. Tell the children they are going to make a model of the area through which they marched.

C • 1.4

Overview:

Students do a variety of hands-on activities to develop the fundamental concept that globes and maps represent the Earth and places on it. Students begin to develop basic understandings of the distribution of physical and human features on Earth.

Inquiry Question:

What does Earth look like? How can we show what a place looks like?

Standards:

1 **Seeing the World Geographically —** Students know how to make and construct maps, globes, and other geographic tools to locate and derive information about people, places and environments.

4 **Human Systems —** Students understand how economic, political, cultural, and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

Skills:

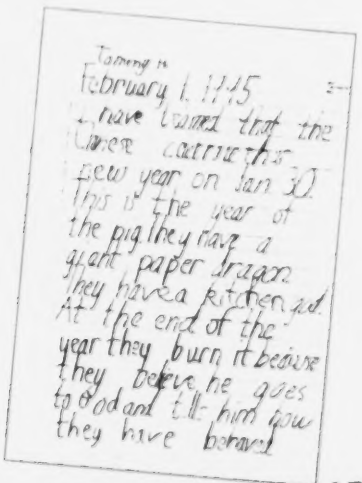
- make maps to organize and present geographic information
- describe different activities that occur on land or water
- use maps, globes to find information
- make observations of the landscape
- discuss how individuals, groups, and cultures perceive places differently

Assessment:

Part 1: Each student assembles or draws a simple map of a known place (classroom, playground, park, bedroom, etc.) showing basic physical features and relationships.

Part 2: Students can correctly point to and name water and land on a globe or map. Students can name some continents and oceans.

Part 1 Benchmarks


Tommy is
February 1, 1995
I have learned that the
Chinese celebrate this
New year on Jan 30
This is the year of
the pig they have a
giant paper dragon
they have a kitchen god
At the end of the
year they burn it because
they believe he goes
to God and tells him how
they have behaved

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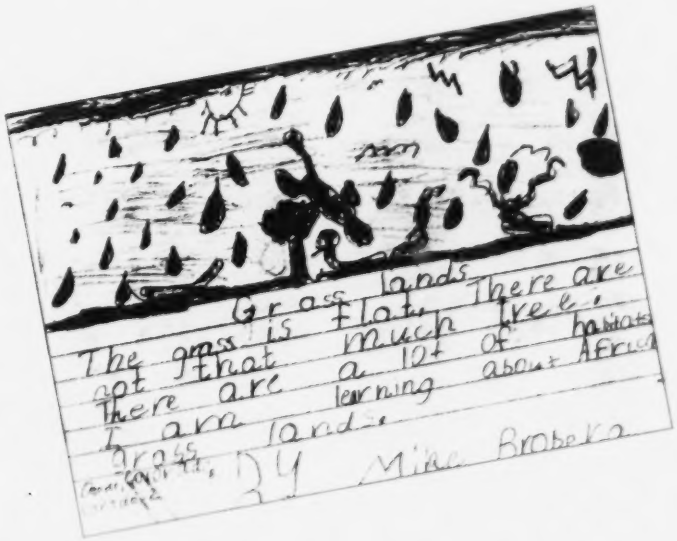
Developmental Profile of Grade Level 2-3 Student

Grade-Level 2-3 students can:

- Go beyond their own observations to identify aspects of people's lives
- Distinguish information relevant to a question from information that is not
- Give their own interpretations from information they have gathered
- Categorize and sequence information
- Work effectively in groups
- Use simple maps and symbols to find places and represent their ideas
- Describe choices made about places
- Identify linkages between resources
- Recognize roles and responsibilities people have in families and communities
- Demonstrate by examples that products they use are made from a variety of resources
- Show how individual elements join to form communities and how things such as interdependence of plants and animals and rules of behavior in groups connect members of systems
- Describe provision of goods and services by some people for others



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GRADE LEVEL 2-3

C • 1.6

Part 1 Benchmarks

STANDARD 1

SEEING THE WORLD GEOGRAPHICALLY

Students know how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.

1.1 Students know how to use maps, globes and other geographic tools to acquire, process and report information from a spatial perspective.

Demonstrated, for example, when students:

- Identify and interpret the basic elements of maps.
- Understand that maps and globes are representations of a place, and use models and symbols to represent real things. Draw simple maps of school, playground or room that includes legend, symbol and directions.

1.2 Students develop knowledge of Earth to locate people, places and environments.

Demonstrated, for example, when students:

- Interpret maps and globes showing physical and human features.
- Create a map to show the setting of a story.
- Draw a simple map of your school, playground or home.
- Identify the relative location of major physical and human features of the continent of study.

1.3 Students know how to analyze the dynamic spatial organization of people, places and environments.

Demonstrated, for example, when students:

- Construct a graph or chart to display geographic data (e.g., enter %'s on computer to create a pie graph of land and water).
- Draw a simple map of school, playground or home using symbols to locate features.
- Explain why some locations are better than others for specific activities (e.g., running on the playground rather than the halls).
- Describe absolute and relative location of places within their neighborhood.

STANDARD 2

PLACES AND REGIONS

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

2.1 Students know the physical and human characteristics of places.

Demonstrated, for example, when students:

- Describe and compare the physical and human characteristics of places by making a model (i.e. mural or a diorama) of a region.
- List the human characteristics of the school (e.g., buildings, streets, boundaries, etc.).
- List the physical characteristics of the school (e.g., topographical features).

2.2 Students know how and why people define regions.

Demonstrated, for example, when students:

- Compare and contrast their own region with another region on another continent.
- Identify and describe regions by physical and human criteria (e.g., climate, vegetation, politics).
- Identify areas in the school by similar activity. Begin to identify areas by physical characteristics.

2.3 Students know how culture and experience influence people's perceptions of places and regions.

Demonstrated, for example, when students:

- Describe how different people view the same place or region (e.g., how students, mothers, joggers view a park).
- Recognize how different people use different areas of the school and playground.

STANDARD 3

NATURAL SYSTEMS

Students understand how physical processes shape Earth's surface patterns and systems.

3.1 Students know the physical processes that shape Earth's surface patterns.

Demonstrated, for example, when students:

- Explain that plants and animals, including human beings, are related to the non-living physical environment.
- Describe how Earth's position relative to the sun affects events and conditions on Earth to explain days, years and seasons.
- List ways in which humans can change ecosystems (e.g., clearing forests, widening waterways, draining wetlands).

3.2 Students know the characteristics and distributions of physical systems of land, air, water, plants and animals.

Demonstrated, for example, when students:

- Identify and describe the physical components of different climates (e.g., precipitation and temperature, plant and animal life) by using pictures, maps, and graphs.
- Observe and describe weather and climate and their effects on the physical environment.
- Place pictures of different vegetation regions on the appropriate portions of a world climate map, world temperature map and world precipitation map.

STANDARD 4

HUMAN SYSTEMS

Students understand how economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

4.1 Students know the characteristics, location, distribution, and migration of human populations.

Demonstrated, for example, when students:

- Suggest reasons for distribution on Earth (e.g., few people live where it is dry or cold) by using climate and vegetation maps in atlas.
- List how students get to school in different locations. Discuss the reasons people come to school in different ways.

4.2 Students know the nature and spatial distribution of cultural patterns.

Demonstrated, for example, when students:

- Compare and contrast how cultures differ in their use of similar environments and resources by comparing one culture with another (e.g., how people live in Phoenix, Arizona, versus Riyadh, Saudi Arabia), by preparing a visual display with maps, graphs and pictures.

4.3 Students know the patterns and networks of economic interdependence.

Demonstrated, for example, when students:

- Locate and classify economic activities in the community and identify facilities in their area (e.g., airport, skiing, mining, factories).
- List forms of transportation and communication used by people in the region.

4.4 Students know the processes, patterns, and functions of human settlement.

Demonstrated, for example, when students:

- Describe characteristics and locations of cities and locate them on maps of Colorado and North America and explain why they are located there and why they developed/did not develop (e.g., availability of resources, proximity to rivers and other transportation routes).
- Find out why their families live where they do. Consider why families in other places live where they do.

4.5 Students know how cooperation and conflict among people influence the division and control of Earth's surface.

Demonstrated, for example, when students:

- Define neighborhood or local area and refines understanding of town/city, state, country, continent and Earth. Locate sites of current events on a world map and distinguish those that arise from conflict over use of space.
- Prepare a series of maps to illustrate how the U.S. expanded its territory to reach its current size and shape.

STANDARD 5

ENVIRONMENT AND SOCIETY

Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution and importance of resources.

5.1 Students know how human actions modify the physical environment.

Demonstrated, for example, when students:

- Prepare an illustrated booklet that shows how and why people alter the physical environment (e.g., by creating irrigation projects, clearing land for houses, planting crops) and how such development affects animals, etc.

5.2 Students know how physical systems affect human systems.

Demonstrated, for example, when students:

- Describe and compare the traditional ways of life of different groups of Native Americans to draw conclusions about how they adapted to the natural resources available (e.g., dependence of Plains People on bison).

5.3 Students know the changes that occur in the meaning, use, location, distribution and importance of resources.

Demonstrated, for example, when students:

- Design and conduct a survey of students' families and teachers to measure resource use in school/home/community on a typical day and classify them as renewable (e.g., timber), non-renewable (e.g., petroleum), or flow (e.g., running water or wind).

STANDARD 6

USES OF GEOGRAPHY

Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

6.1 Students know how to apply geography to understand the past.

Demonstrated, for example, when students:

- Show how the students' community has changed by interviewing older community members as a basis for writing a "this is how it was" story of the community and illustrate the story with maps and pictures.
- Read stories about children living in the past, describe their attitudes toward the physical environment and compare those attitudes with the attitudes of children today.

6.2 Students know how to apply geography to understand the present and plan for the future.

Demonstrated, for example, when students:

- Describe some human-induced changes that are taking place in different parts of the world and speculate on their future impacts (e.g., developments and conservation issues in wetlands, rain forests, grasslands, oceans).
- Identify resources used by the class or the family. Distinguish characteristics of resources and classifies resources as renewable or non-renewable.

GRADE LEVEL 2-3

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Part 1 Benchmarks

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GRADE LEVEL 2-3

Grasslands: A Natural Resource

by Janet Pommrehn, 2nd grade teacher
Denver Public Schools

Tasks:

Background resources on prairie grasses are shared with students to provide background knowledge. Students chart the types of grasslands and their characteristics. Comparisons are made between the Colorado short prairie grass and the Kenya savanna. Dioramas are begun with Colorado and savanna grasses. Murals are created to depict savannas and prairies with landforms, plant and animal life, people, dwellings and climate/weather features. Students explore past and present uses of the grasslands; they also compare and contrast housing, food, clothing, transportation, native and present day peoples. An investigation and analysis of how climate and weather affect grasslands is also included in the unit.

C • 1.8

Overview:

Grasslands are the world's best places to grow food. Getting food becomes a problem as population increases and land is plowed under to make room for people. The Grasslands Unit teaches about two grasslands (Colorado and Kenya) and ends with the class analyzing the future of one of the earth's most precious natural resources.

Inquiry Question:

How do grasslands of the past compare to the grasslands of the present and what is their role in our future?

Standards:

2 Students know the physical and human characteristics of places and can use this knowledge to define and study regions for the purpose of interpreting patterns of change.

3 Students understand how processed of nature interact to shape Earth's surface patterns and systems.

6 Students can apply knowledge of people, places, and environments to interpret the past and present and to plan for the future.

Part 1 Benchmarks

Zebras belong to the horse family. There are three different kinds of zebras. Zebras eat with antelopes on the African grasslands.

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GRADE LEVEL 2-3

C • 1.9

Part 1 Benchmarks

Skills:

Acquiring geographic information

- Using maps, globes and atlases to find information
- Using video/multi-media/computers to access, gather, and organize geographic information

Presenting geographic information

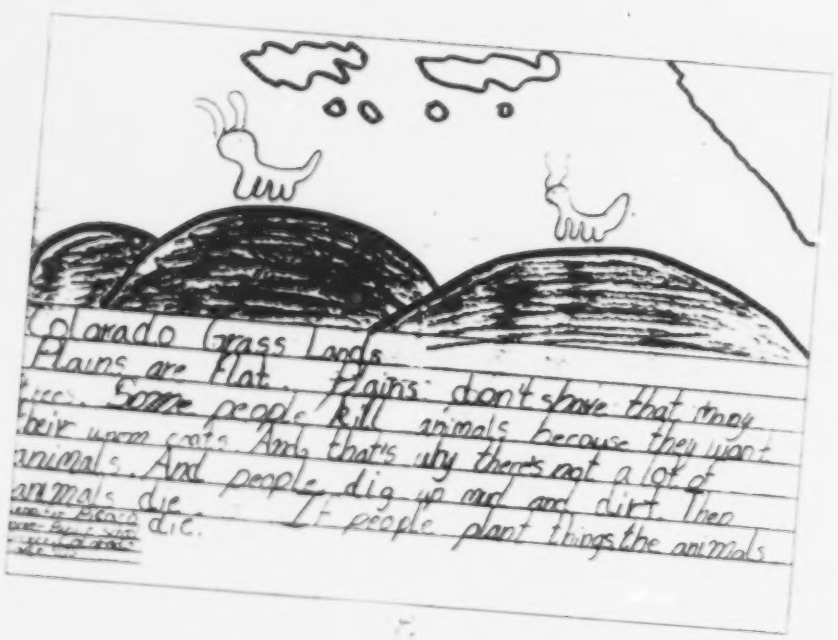
- Describing the similarities and differences between different regions
- Explaining how physical processes work
- Describing current and past events in geographic context
- Making charts to organize and present geographic information
- Investigating and reporting on the characteristics of a place
- Investigating and reporting on changes in a region
- Investigating and reporting on the interrelationships and processes of an ecosystem

Analyzing geographic information

- Judging the appropriateness of materials
- Predicting geographic events from different perspectives

Assessment:

- Students are directed to select either in teams or individually: a) Colorado short grass prairie or, b) Kenya savanna.
- The task is to make the previously planted container of grasses into a recognizable ecosystem by adding plants, animals, peoples, homes etc., in some art form (clay, paper, etc.). Each diorama is to be divided in half, to show both past and present.
- Dioramas are presented to the class and contents are justified orally using information gathered in the unit. Weather and climate are discussed. Students need to state why grasslands are a "region."
- Students then share if they think grasslands should be preserved for the future and why.


Colorado Grass Lands
Plains are Flat. Plains don't have that many
Some people kill animals because they want
their warm coats. And that's why there's not a lot of
animals. And people dig up and and dirt. Then
animals die.
If people plant things the animals
die.

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GRADE LEVEL 2-3

C • 1.10

Part 1
Benchmarks

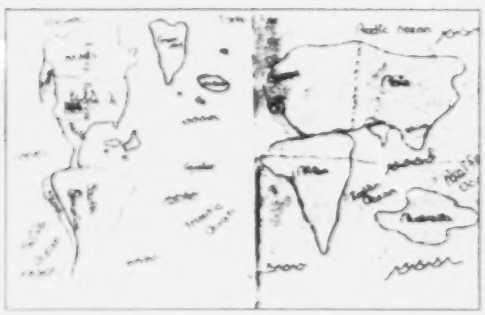
Developmental Profile of Grade Level 4-5 Student

Descriptions of NAEP 1994 Geography Achievement incorporated into Profile

Grade-Level 4-5 students can:

- Examine a variety of maps to identify and describe their basic elements
- Use different types of map scales to measure distance
- Answer questions about the location of places
- Write descriptions regarding the spatial organization of places
- Identify cultural characteristics that originated in other cultures
- Compare neighborhood similarities and differences
- Create graphs and maps of local communities showing population characteristics
- Interpret aerial photographs or satellite-produced images to locate and identify physical and human features
- Move beyond immediately available information to identify what else needs to be asked or known
- Design a map that displays information selected by the student, using symbols
- Read a narrative and create a sketch map to illustrate the narrative
- Report regional data in both a two-dimensional (proportional symbols) and three-dimensional (stacking counters) format
- Construct diagrams or charts to display spatial information
- Use a map grid to determine location

Before: student sample taken during early part of 5th grade.



After: student sample taken toward the end of 5th grade.

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GRADE LEVEL 4-5

C • 1.12

STANDARD 1
SEEING THE WORLD GEOGRAPHICALLY

Students know how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.

1.1 Students know how to use maps, globes and other geographic tools to acquire, process and report information from a spatial perspective.

Demonstrated, for example, when students:

- Identify and interpret the basic elements of maps.
- Locate places using latitude and longitude to describe associations.

1.2 Students develop knowledge of Earth to locate people, places and environments.

Demonstrated, for example, when students:

- Design a map showing physical and human features (e.g., mountains, rivers, vegetation regions, cities).
- Design a map to illustrate a narrative (e.g., follow the Wilder family movement in the Little House series or make a map of where they lived).

1.3 Students know how to analyze the dynamic spatial organization of people, places and environments.

Demonstrated, for example, when students:

- Construct diagrams or charts (or use appropriate knowledge) to display spatial knowledge (e.g., vegetation, regions, climates, human population).

STANDARD 2
PLACES AND REGIONS

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

2.1 Students know the physical and human characteristics of places.

Demonstrated, for example, when students:

- Describe and compare the physical and human characteristics of places using a variety of visual materials and data sources.

2.2 Students know how and why people define regions.

Demonstrated, for example, when students:

- Describe changes in the physical and human characteristics of regions which occur over time, and identify the consequences of such (e.g., cutting of rain forest, draining of wetlands, plowing of plains).
- Define and identify regions in terms of physical and human characteristics (e.g., climate, vegetation, population, politics and languages).

2.3 Students know how culture and experience influence people's perceptions of places and regions.

Demonstrated, for example, when students:

- Interview and collate information on how people of different backgrounds view the same place or region.

STANDARD 3
NATURAL SYSTEMS

Students understand how physical processes shape Earth's surface patterns and systems.

3.1 Students know the physical processes that shape Earth's surface patterns.

Demonstrated, for example, when students:

- Describe groups of plants and animals (biomes) and climate regions in their state.
- Describe how Earth's position relative to the Sun affects events and conditions on Earth by preparing a model or demonstration to explain days, years and seasons.
- Describe how vegetation and soil can affect human settlement and vice versa.

3.2 Students know the characteristics and distributions of physical systems of land, air, water, plants and animals.

Demonstrated, for example, when students:

- Identify and describe the physical components of Earth's atmosphere, lithosphere, hydrosphere, and biosphere (e.g., climates, land forms, water cycle, ecosystems).
- Understand how natural processes create or change land forms. Compare and contrast how natural processes have affected changes in various physical environments (e.g., hurricanes, volcanoes, erosion). Analyze how the Earth/Sun relationship shapes climate and vegetation patterns on Earth.
- Write descriptions of ecosystem components (plants, animals, climate, locations) and illustrate.

Part 1 Benchmarks

STANDARD 4

HUMAN SYSTEMS

Students understand how economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

4.1 Students know the characteristics, location, distribution, and migration of human populations.

Demonstrated, for example, when students:

- Discuss the reasons for migrations (e.g., slave trade, famine, persecution) after reading literature which describes migration, in a diary entry, short play, or story and illustrate with a map.
- Understand and graph the characteristics of the population of a place. Describe the patterns and distribution of various groups from around the world that influence this region.

4.2 Students know the nature and spatial distribution of cultural patterns.

Demonstrated, for example, when students:

- Use interviews with parents and grandparents to understand cultural change (e.g., women in society, modes of transportation, foods, attitudes toward environment and resources, language and religion).
- Identify the characteristics of cultures in Colorado and describe how the cultures, landscapes and their use changed over time. Use thematic maps to show patterns of culture in the region. Demonstrate how culture affects and is affected by the physical environment of regions.

4.3 Students know the patterns and networks of economic interdependence.

Demonstrated, for example, when students:

- Prepare a timeline to show how transportation and communication have changed and have affected trade and economic activities (e.g., better roads and refrigerated trucks yield fresh vegetables and fruits).
- Identify the location of economic activities in the region and examine reasons for those locations.

4.4 Students know the processes, patterns and functions of human settlement.

Demonstrated, for example, when students:

- Explain patterns of settlement at different periods and suggest why humans settle where they do and why settlements persist or decline (e.g., booming mining towns became ghost towns after depletion of minerals or devaluation of gold).
- Compare and contrast maps to determine historic factors that led to adaptations/ changes in land use in the region. Identify similarities and differences in how diverse groups responded to geographic factors. Recognize the need for and purpose of boundaries.

4.5 Students know how cooperation and conflict among people influence the division and control of Earth's surface.

Demonstrated, for example, when students:

- Describe political, social and economic divisions throughout early American history. Cite examples of conflict and cooperation that arose over use of space during America's development and trace their consequences.
- Identify and discuss how people divide the Earth's surface into different types of territorial units. Prepare an atlas of a variety of those units (e.g., county, state, province, country and world regional trade maps).
- Identify similarities and differences in the ways human societies in Colorado utilize and have utilized resources. Generalize patterns of resource use and their impact on regional growth.

STANDARD 5

ENVIRONMENT AND SOCIETY

Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution and importance of resources.

5.1 Students know how human actions modify the physical environment.

Demonstrated, for example, when students:

- Make a want ad poster to advertise a plant or animal that is no longer found in the local community in order to assess the impact of human activities on the physical environment and reasons for those changes (e.g., climate changes, air and water pollution, expanding human settlement).
- Classify ways that humans depend on, adapt to and alter the physical environment. Identify the interactive relationship of systems.

5.2 Students know how physical systems affect human systems.

Demonstrated, for example, when students:

- Collect data on the occurrence of natural hazards in the student's state and elsewhere in the U.S., to create a map entitled: *Location of Types of Natural Hazards in the State/Nation from Month to Month.*
- Identify and classify the characteristics of areas on Earth that contain little or no human population (e.g., cold, heat, altitude, accessibility, etc.).
- List advantages and disadvantages of technology on natural resources, and use newspaper articles to cite examples.
- Examine ways population growth affects air, land and water quality and how they impact the physical environment.

5.3 Students know the changes that occur in the meaning, use, location, distribution and importance of resources.

Demonstrated, for example, when students:

- Create a written account comparing the resources used in the student's region, emphasizing differences in the ways resources are used and valued (e.g., use of wood in the U.S. construction industry vs. use of wood for fuel in the Dominican Republic).
- Use historical case studies to explain how settlement patterns are influenced by the discovery and use of resources (e.g., Colorado mining towns as centers of settlement in the 19th century).

GRADE LEVEL 4-5

C♦ 1.13

Part 1 Benchmarks

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GRADE LEVEL 4-5

STANDARD 6

USES OF GEOGRAPHY

Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

6.1 Students know how to apply geography to understand the past.

Demonstrated, for example, when students:

- Use maps and narratives to trace historic events in a spatial context (e.g., read about Paul Revere's ride and follow the route at an appropriate scale).
- Compare and contrast maps to determine historic factors that led to adaptions/changes in land use in the region. Identify similarities and differences in how diverse groups responded to geographic factors. Recognize the need for and purpose of boundaries.

6.2 Students know how to apply geography to understand the present and plan for the future.

Demonstrated, for example, when students:

- Compare attitudes of people from different societies and cultures regarding their feelings about personal life, education, aspirations and the differences between boys and girls.
- Identify similarities and differences in the ways human societies in Colorado utilize/have utilized resources. Generalize patterns of use of resources and the impact on regional growth.

C • 1.14

Part 1 Benchmarks

Mental Maps

by Corine O'Donnell, 5th grade teacher
Jefferson County School District

Task:

At the start of the school year, ask students to draw their own mental maps of the world on a blank sheet of paper. Directions at the beginning of the school year:

Draw and label the following:

1. continents
2. oceans
3. Prime Meridian
4. International Dateline
5. Equator
6. U.S.A.
7. anything else you want to add

Then at the end of the year, the students repeat the task and add:

8. Gulf of Mexico
9. Great Britain
10. Greenland
11. Colorado
12. Japan
13. West Indies
14. Caribbean Sea

so that at year's end they have another mental map of the world and compare the improvement.

Overview:

Important to every student's awareness of geography is the realization that we all carry mental maps around with us throughout our lives. Formal instruction in geography increases the number of mental maps and refines and sharpens the content of those we already possess.

Inquiry Question:

What is our image of the world?

Standards:

1 **Seeing the World Geographically** — Students know how to make and construct maps, globes, and other geographic tools to locate and derive information about people, places and environments.

Skills:

- Acquiring geographic information
- Presenting r geographic information

Assessment:

Discuss the maps drawn from memory, e.g. Why is the Atlantic Ocean in the center of the map? Why did you choose to add certain things?

At the end of the school year, have students write one or two paragraphs comparing/contrasting their two maps by asking the following question: "Which one of your maps is better? Why?"

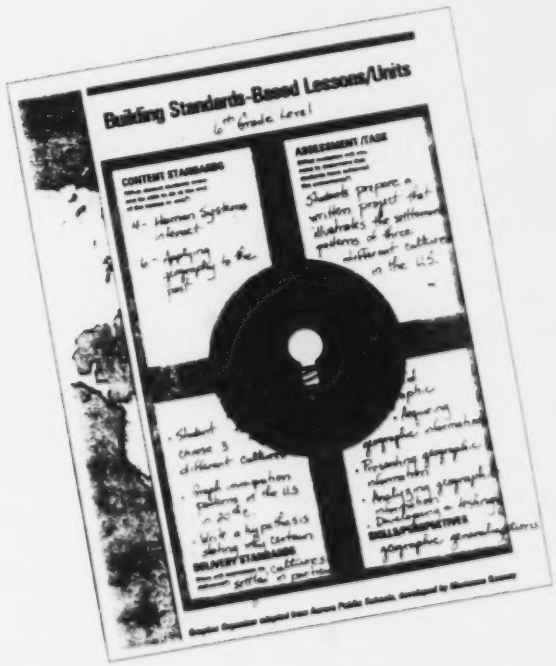
Developmental Profile of Grade Level 6 Student

GRADE LEVEL 6

Grade-Level 6 students can:

C • 1.15

- Make decisions about what sort of sources and information-gathering techniques they need to investigate a question
- Transfer information from one form to another (written to numeric/chart)
- Distinguish between geographical assertions supported by evidence and those without
- Identify periods in United States history, point out significant events, place them on a timeline, and describe ways of life and the achievements of people and groups in these periods
- Present general descriptions of groups/communities in terms of their social structures, traditions and beliefs
- When describing events, past or present, understand and present the viewpoints of various participants
- Describe the associations between the elements/features of places
- Demonstrate an increasing awareness of differing points of view among individuals and groups
- Examine variations in resource use and development in relation to a number of different factors
- Describe work conditions in different settings and use this knowledge to suggest ways that conditions influence the effectiveness of work
- Identify ways in which information is used as a resource to make and record decisions



Part 1 Benchmarks

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GRADE LEVEL 6

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STANDARD 1
SEEING THE WORLD GEOGRAPHICALLY

Students know how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.

1.1 Students know how to use maps, globes and other geographic tools to acquire, process and report information from a spatial perspective.

Demonstrated, for example, when students:

- Define the major components of maps, globes and other data displays.
- Demonstrate the use of maps, globes and other data displays to understand the land, people, culture, history and technology of the Western Hemisphere.

1.2 Students develop knowledge of Earth to locate people, places and environments.

Demonstrated, for example, when students:

- Draw a world map from memory.
- Identify the largest urban areas in the U.S. now and in the past.

1.3 Students know how to analyze the dynamic spatial organization of people, places and environments.

Demonstrated, for example, when students:

- Trace on a map the spread of language, religion and customs from one culture to another (e.g., Chinese restaurants to San Francisco, the German language to the Midwest in the 19th century).
- Examine distribution maps to discover reasons related to the distribution of people.
- Summarize patterns of land use in city centers and rural areas.

STANDARD 2
PLACES AND REGIONS

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

2.1 Students know the physical and human characteristics of places.

Demonstrated, for example, when students:

- Use field observations, maps and other tools to identify and compare physical characteristics (e.g., soils, land forms, vegetation, wildlife, climate, and natural hazards).
- Examine the human and physical characteristics of places.
- Compare and contrast physical and human processes that shape places.
- Examine and explain the results of change on humans and landscape.

2.2 Students know how and why people define regions.

Demonstrated, for example, when students:

- Give examples of regions at different spatial scales (e.g., regions with continents, countries and cities).
- Explain how regions are connected (e.g., cultural clues such as food, language and customs).

2.3 Students know how culture and experience influence people's perceptions of places and regions.

Demonstrated, for example, when students:

- Read stories about young people in other cultures to determine what they perceive as beautiful or valuable in their countries' landscapes.
- Assess a place or region from the points of view of various types of people - a homeless person, a business person, a taxi driver, a police officer or a tourist.

STANDARD 3
NATURAL SYSTEMS

Students understand how physical processes shape Earth's surface patterns and systems.

3.1 Students know the physical processes that shape Earth's surface patterns.

Demonstrated, for example, when students:

- Identify the floral and fauna of an ecosystem and tell how they are linked and interdependent.
- Explain how physical processes influence ecosystems.

3.2 Students know the characteristics and distributions of physical systems of land, air, water, plants and animals.

Demonstrated, for example, when students:

- Examine basic physical patterns on Earth.
- Compare regions of the world with similar physical features (e.g., desert regions in Nevada and western China, sub-arctic regions in Russia and Canada).
- Define renewable and non-renewable Earth resources.
- Predict the consequences of a specific physical process operating on Earth's surface.

Part 1 Benchmarks

STANDARD 4

HUMAN SYSTEMS

Students understand how economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

4.1 Students know the characteristics, location, distribution and migration of human populations.

Demonstrated, for example, when students:

- Examine the characteristics of populations in the Western Hemisphere.
- See the relationship between the ways in which population migrates and the character of the places that the population leaves and enters.

4.2 Students know the nature and spatial distribution of cultural patterns.

Demonstrated, for example, when students:

- Classify people in the Western Hemisphere by different cultural characteristics.
- Use a variety of maps to compile information regarding the location of various cultures within the Western Hemisphere.
- Compile examples of cultural change to identify the geographic and historical factors that influenced the change.
- Analyze the impact various cultures have had upon regions in the Western Hemisphere.

4.3 Students know the patterns and networks of economic interdependence.

Demonstrated, for example, when students:

- Identify and explain the factors influencing industrial location in the Western Hemisphere.
- Identify and explain the need for trade in the Western Hemisphere and the key elements in the systems that support it.
- Construct various maps showing historical and contemporary patterns of origin and destination networks for countries in the Western Hemisphere.
- Discuss issues related to economic development in the Western Hemisphere.

4.4 Students know the processes, patterns, and functions of human settlement.

Demonstrated, for example, when students:

- Analyze the distribution of clusters of settlement and their relationship to patterns of land forms, climates, and vegetation in the Western Hemisphere.
- Construct reasons for the patterns of settlement in the Western Hemisphere at different periods of time.
- Assess the patterns of land use and human settlement in rural, suburban, and urban places in the Western Hemisphere.
- Classify cities in the Western Hemisphere according to their characteristics.

4.5 Students know how cooperation and conflict among people influence the division and control of Earth's surface.

Demonstrated, for example, when students:

- Explain why people cooperate and why they engage in conflict to divide the Western Hemisphere's surface into different spaces.
- Analyze divisions of the Western Hemisphere's surface at different scales.

STANDARD 5

ENVIRONMENT AND SOCIETY

Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution and importance of resources.

5.1 Students know how human actions modify the physical environment.

Demonstrated, for example, when students:

- Describe the ways parts of human or physical systems are interrelated (e.g., Western Hemisphere).
- Describe ways in which humans adapt to physical changes in the Earth's environment.
- Explain how environmental changes made in one place affect other places (e.g., effect of pesticides washed into river systems on water quality in communities located downstream).

5.2 Students know how physical systems affect human systems.

Demonstrated, for example, when students:

- Explain how physical and environmental systems affect the way people live.
- Explore the positive and negative effects of humans on the environment.
- Describe ways population movement has influenced where people live.

5.3 Students know the changes that occur in the meaning, use, location, distribution and importance of resources.

Demonstrated, for example, when students:

- Recognize which resources are located in various regions or countries (e.g., Western Hemisphere).
- Demonstrate how various regions or countries use resources and compare to resource use in other regions.
- Examine current impact of rate of resource use.
- Predict what could happen to a region with better management of resources.

GRADE LEVEL 6

C • 1.17

Part 1 Benchmarks

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GRADE LEVEL 6

STANDARD 6

USES OF GEOGRAPHY

Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

6.1 Students know how to apply geography to understand the past.

Demonstrated, for example, when students:

C • 1.18

- Identify the various geographic aspects of regions (e.g., in the Western Hemisphere).
- Analyze the impact migration has had on regions or countries.

6.2 Students know how to apply geography to understand the present and plan for the future.

Demonstrated, for example, when students:

- Examine various social, political and economic regions (e.g., Western Hemisphere) to see how they are different from past to present.
- Show how environment and resources have affected various areas from past to present.
- Infer what the future will bring to various regions of the Western Hemisphere based on resource/human interaction.

Part 1 Benchmarks

Skills: Coming to America

by Kathy Tossava, 6th grade teacher
Adams County School District #50

Tasks:

Students choose three different cultures. Graph immigration to the U.S. in the 20th century using information from ARGUS. Using deductive reasoning, and based on research, students will write a hypothesis stating why certain cultures settled in particular regions of the U.S.

Overview:

Throughout the United States immigrants have settled in particular places. By locating and describing the factors of adaptation and change in settlements over a period of time, we discover that the physical environment and is affected by many different cultures.

Inquiry Question:

What motivates people to immigrate to the United States, and why did they settle in particular geographic locations?

Standards:

4 **Human Systems —** Students understand how economic, political, cultural, and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

6 **Applying Geography —** Students apply knowledge of people and places, and environments to interpret the past and present and to plan for the future.

Skills:

- Acquiring geographic information
- Presenting geographic information
- Analyzing geographic information
- Developing and testing geographic generalizations

Assessment:

Students will prepare a written project that illustrates the settlement patterns of these three different cultures in the Unites States.

Students will include in their report:

- A map showing settlement patterns of three different cultures.
- A graph showing movement of people to the U.S. in the 20th century.
- A written report analyzing data that compares places of settlement to place of origin.
- A written hypothesis, based on accumulated data, on why immigrants settled in a particular area.
- A journal telling about their experiences as an immigrant in the Gateway (by Interact Corporation) simulation.

Developmental Profile of Grade Level 7 Student

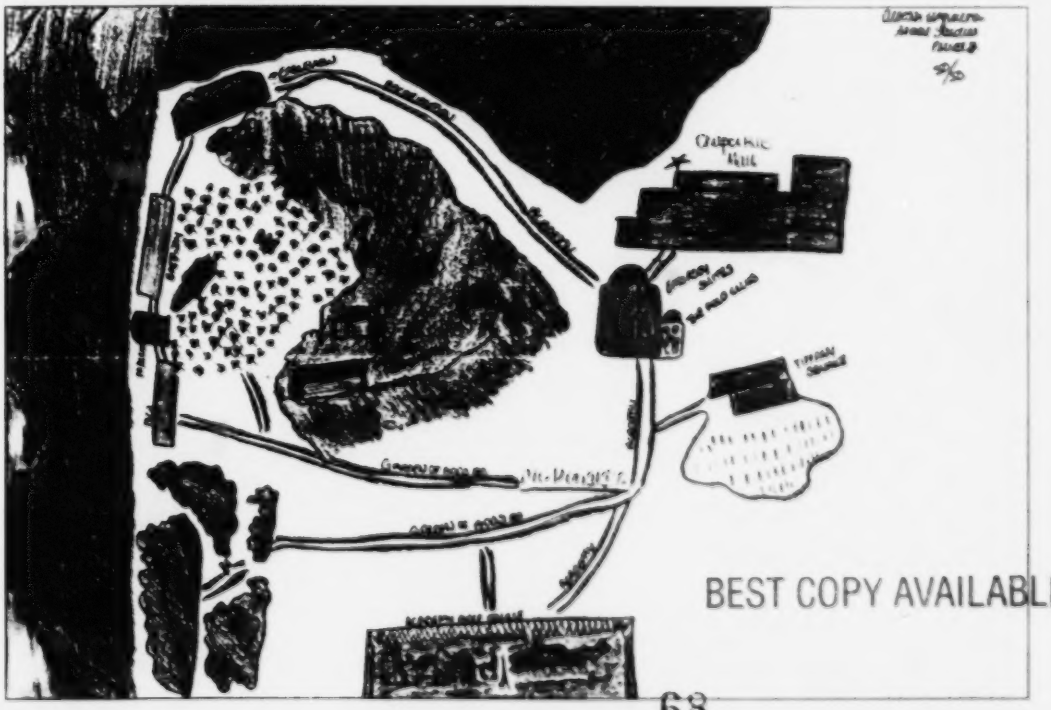
GRADE LEVEL 7

Grade-Level 7 students can:

C • 1.19

- Identify what is significant about a topic/issue and work out ways of conducting an investigation after developing geographical hypotheses
- Identify ways authors' motives can influence their presentation of material
- Diagnose ineffective work/suggest ways to overcome difficulties
- Analyze push/pull factors that influence migratory patterns, and explain how factors outside the United States influence social development
- Put historical events in sequence over long periods of time
- Analyze ways communities and belief systems help a society maintain an identity
- Use a wide array of resources to explain how change happens to places over time
- Display an increasing awareness of the views of others, and explain what different viewpoints are on the various uses of places
- Explain relationships in resource use and management
- Compare structures of different natural, political, legal and economic systems

Student sample of mental map.



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Part 1 Benchmarks

GRADE LEVEL 7

C • 1.20

Part 1 Benchmarks

STANDARD 1
SEEING THE WORLD GEOGRAPHICALLY

Students know how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.

1.1 Students know how to use maps, globes and other geographic tools to acquire, process and report information from a spatial perspective.

Demonstrated, for example, when students:

- Create different types of maps, globes and other geographic tools showing the features of a region.
- Identify the relationship between land use (resources, climate and population density) maps of any given country or region.

1.2 Students develop knowledge of Earth to locate people, places and environments.

Demonstrated, for example, when students:

- Draw and analyze a sketch of maps of different regions and compare them with atlas maps to determine the accuracy of place, location and knowledge (e.g., political maps of Canada, the United States and Europe).
- Identify and compare the different criteria that people use for rating places (e.g., environmental amenities, economic opportunity, crime rate).

1.3 Students know how to analyze the dynamic spatial organization of people, places and environments.

Demonstrated, for example, when students:

- Trace global migration patterns of plants and animals, as well as the diffusion of culture traits from points of origin to destination, and draw general conclusions about the speed and direction of such movements.
- Demonstrate an understanding of physical and human distribution patterns.
- Develop an understanding about the relationships between natural resources, transportation and other factors that influence economic development.
- Examine the patterns and processes of diffusion.

STANDARD 2
PLACES AND REGIONS

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

2.1 Students know the physical and human characteristics of places.

Demonstrated, for example, when students:

- Develop and test hypotheses regarding ways in which the locations, building styles and other characteristics of places are shaped by natural hazards such as earthquakes, floods, and hurricanes (e.g., building design and land use in Tokyo, Los Angeles and Manila).
- Demonstrate an understanding of human and physical characteristics of places.
- Describe how an environment changes due to human intervention.

2.2 Students know how and why people define regions.

Demonstrated, for example, when students:

- Describe the relationships between the physical and cultural characteristics of a region (e.g., the sunbelt's warm climate and popularity with retired people).
- Explain the importance of trade and other connections between regions in the U.S. and the world, using maps, tables and graphs.

2.3 Students know how culture and experience influence people's perceptions of places and regions.

Demonstrated, for example, when students:

- Give examples of how, in different regions of the world, religion and other belief systems influence traditional attitudes toward land use (e.g., the effects of Islamic and Jewish dietary practices on land use in the Middle East).
- Compare ways in which people of different cultural origins define, build, and name places and regions (e.g., street names in new subdivisions and names given to places or regions to symbolize an event or principle or to honor a person or cause).

STANDARD 3
NATURAL SYSTEMS

Students understand how physical processes shape Earth's surface patterns and systems.

3.1 Students know the physical processes that shape Earth's surface patterns.

Demonstrated, for example, when students:

- Illustrates different types of ecosystems on Earth.
- Compare a landscape little changed with one changing rapidly, and explain processes causing changes.
- Devise a set of research questions to predict changes to landform features.

3.2 Students know the characteristics and distributions of physical systems of land, air, water, plants and animals.

Demonstrated, for example, when students:

- Describe basic physical patterns on Earth.
- Construct and analyze climate graphs for selected places and suggest reasons for similarities and differences in climates.
- Examine renewable and non-renewable Earth resources.

STANDARD 4

HUMAN SYSTEMS

Students understand how economic, political, cultural and social processes interact to shape patterns of human populations: interdependence, cooperation and conflict.

4.1 Students know the characteristics, location, distribution, and migration of human populations.

Demonstrated, for example, when students:

- Examine the characteristics of populations in the Eastern Hemisphere.
- Describe the distribution of population at a range of scale.
- Describe patterns and causes of migration in the Eastern Hemisphere.
- Understand the relationship between the ways in which population migrates and the character of the places that the population leaves and enters.

4.2 Students know the nature and spatial distribution of cultural patterns.

Demonstrated, for example, when students:

- Classify people in the Eastern Hemisphere by different cultural characteristics.
- Use a variety of maps to compile information regarding the location of various cultures within the Eastern Hemisphere.
- Compile examples of cultural change to identify the geographic and historical factors that influenced the change.
- Analyze the impact various cultures have had upon regions in the Eastern Hemisphere.

4.3 Students know the patterns and networks of economic interdependence.

Demonstrated, for example, when students:

- Identify and explain the factors influencing industrial location in the Eastern Hemisphere.
- Identify and explain the need for trade in the Eastern Hemisphere and the key elements in the systems that support it.
- Construct various maps showing historical and contemporary patterns of origin and destination networks for countries in the Eastern Hemisphere.
- Discuss issues related to economic development in the Eastern Hemisphere.

4.4 Students know the processes, patterns, and functions of human settlement.

Demonstrated, for example, when students:

- Analyze the distribution of clusters of settlement and their relationship to patterns of land forms, climates and vegetation in the Eastern Hemisphere.
- Construct reasons for the patterns of settlement in the Eastern Hemisphere during various eras.
- Assess the patterns of land use and human settlement in rural, suburban and urban places in the Eastern Hemisphere.
- Classify cities in the Eastern Hemisphere according to their physical characteristics.

4.5 Students know how cooperation and conflict among people influence the division and control of Earth's surface.

Demonstrated, for example, when students:

- Explain why people cooperate and why they engage in conflict to divide the Eastern Hemisphere's surface into different spaces.
- Analyze divisions of the Eastern Hemisphere's surface at different scales.

STANDARD 5

ENVIRONMENT AND SOCIETY

Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution and importance of resources.

5.1 Students know how human actions modify the physical environment.

Demonstrated, for example, when students:

- Demonstrate how humans cause physical change to their environment.
- Predict ways that humans adapt to their environment due to physical changes and technological influences.
- Develop maps, tables, or graphs to illustrate how environmental change in one part of the world can affect places in other parts of the world (e.g., the Chernobyl nuclear power plant accident and radioactive fallout in Europe and Asia).

5.2 Students know how physical systems affect human systems.

Demonstrated, for example, when students:

- Describe ways in which the physical environment places limitations on humans.
- Describe the positive and negative effect humans have had on their environment as a result of physical and technological changes.
- Examine how population has affected urban and rural life.

5.3 Students know the changes that occur in the meaning, use, location, distribution and importance of resources.

Demonstrated, for example, when students:

- Describe what energy sources each country or region has and how resources are used.
- Show how each region or country used resources in relationship to the rest of the world.
- Predict the impact of resource use within a region or country and the consequences for other regions or countries.

GRADE LEVEL 7

C • 1.21

Part 1 Benchmarks

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GRADE LEVEL 7

STANDARD 6

USES OF GEOGRAPHY

Students apply knowledge of people, places and environments to understand the past and present and to plan for the future

C • 1.22

6.1 Students know how to apply geography to understand the past.

Demonstrated, for example, when students

- Recognize the spatial and environmental aspects of various regions of the Eastern Hemisphere in order to understand the history of the region.
- Examine how various regions and/or countries (e.g., in Eastern Hemisphere) dealt with social, economic and political changes.
- Debate ways that the past history of countries can and will affect their future.

6.2 Students know how to apply geography to understand the present and plan for the future.

Demonstrated, for example, when students

- Identify the various ways in which social, political and economic regions (e.g., in the Eastern Hemisphere) are different according to their past history.
- Analyze the ways various countries have used their environment in a positive or negative way in the past and present.
- Create "what if" scenarios in terms of how various regions' environment and resources will affect their future.

Part 1 Benchmarks

Kid's Community Guide

by Nancy Morlock-Hollins and Marsha Spanswick, middle school teachers
El Paso Co. S/D #11 - Colorado Springs

Tasks:

Students from three different schools make "mental maps" of the places they go to on a regular basis. Maps are shared with partners from the same school but from different neighborhoods. Justifications are presented for places students would take friends or relatives. Using phone books and a local map, places are plotted and color coded. Maps are exchanged between schools. A histogram (frequency chart) is created from information from the three schools. Clustering of favorite places is discussed and analyzed.

Overview:

Kids' Community Guide is an inter-school unit, involving students from schools with significant demographic differences. By creating mental maps the students will see how mental references to places help people organize knowledge of regions. Students will compare and contrast how their favorite places align with those of middle school students from other schools. From generated lists of favorite places, students will create a kids' guide to their community.

Inquiry Question:

How do culture and experience influence peoples' perception of places within their community? How can cooperation and new experiences break down barriers?

GRADE LEVEL 7

C • 1.23

Part 1 Benchmarks

Standards:

1 Students know how to use maps, globes, and other geographic tools to locate and derive information about people, places, and environments.

2 Students know the physical and human characteristics of places and can use this knowledge to define and study regions for the purpose of interpreting patterns of change.

4 Students understand how economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, conflict, and cooperation on Earth's surface.

6 Students apply knowledge of people, places, and environments to interpret the past and present and to plan for the future.

Skills:

- Asking geographic questions
- Acquiring geographic information
- Presenting geographic information
- Analyzing geographic information
- Developing and and testing geographic information

Assessment:

Students will create a working portfolio on the project that will include:

- The student's mental map
- A log of comments the student has made on the map from the partner school
- Worksheets and color-coded maps
- Comment on-line with partners from other schools regarding differences and similarities in opinions and perspectives; hard copy in portfolio
- Thought paper- What are some places you would like to explore? Why? What do you think causes you and your peers to either go to or avoid certain places?

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GRADE LEVEL 7

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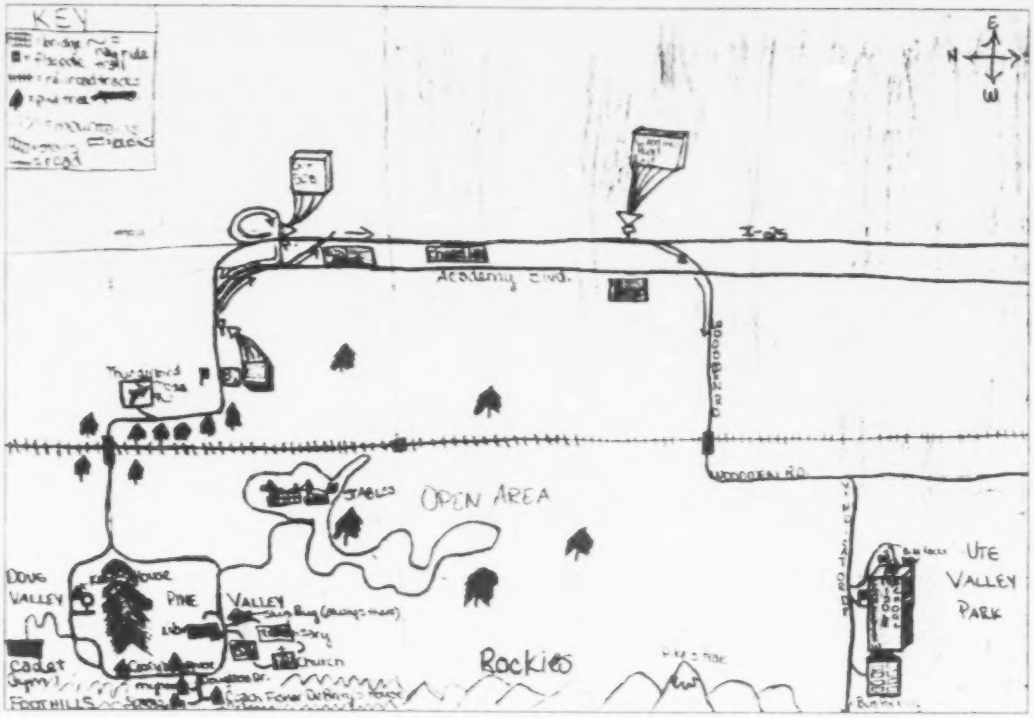

Part 1
Benchmarks

Developmental Profile of Grade Level 8 Student

GRADE LEVEL 8

Descriptions of NAEP 1994 Geography Achievement Incorporated into Profile

Grade-Level 8 students can:

C • 1.25

- Explain concepts relating to patterns, relationships, distance, direction, scale, boundary, site and situation
- Respond accurately to descriptive questions using information obtained by the use of visual/technological tools
- Solve locational problems requiring integration of information from two or more sources
- Identify a variety of regional physical and cultural features
- Identify differences in map projections and select projections for various purposes
- Explain how places change due to human activity
- Explain and illustrate how regions can be used as a strategy for organizing and understanding Earth's surface
- Use information from maps to explain the role that regions play in influencing trade and migration patterns
- Analyze spatial phenomena using a variety of sources with information presented at a variety of scales
- Use case studies to develop maps and for spatial analysis
- Identify and interpret patterns of climate, vegetation and population across Earth's surface

Part 1
Benchmarks

GRADE LEVEL 8

C • 1.26

STANDARD 1

SEEING THE WORLD GEOGRAPHICALLY

Students know how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.

1.1 Students know how to use maps, globes and other geographic tools to acquire, process and report information from a spatial perspective.

Demonstrated, for example, when students:

- Compare and contrast the features and functions of maps, globes, and other geographic tools.
- Develop and utilize maps, globes and other geographic tools to examine the impact of physical geography on the development of a region.
- Evaluate the relative merit of maps, globes, and other geography tools to solve problems.
- Explain map essentials (e.g., scale, directional indicators and symbols).
- Use data and a variety of symbols and colors to create thematic maps and graphs of various aspects of the students' local community, state, country and the world (e.g., patterns of population, rainfall, vegetation).

1.2 Students develop knowledge of Earth to locate people, places, and environments.

Demonstrated, for example, when students:

- Draw a world map from memory and explain why some countries are included (and others not), why some countries are too large (and others too small).
- Identify the locations of culture hearths, urban areas, land forms and climate.
- Use mental maps of place location to list the countries through which a person would travel between two points (e.g., Paris to Moscow).

1.3 Students know how to analyze the dynamic spatial organization of people, places and environments.

Demonstrated, for example, when students:

- Analyze distribution maps to discover geographic information (e.g., resources, terrain, climate, water, cultural hearths).
- Develop a list of places in the world that Americans depend on for imported resources and manufactured goods (e.g., petroleum from Southwestern Asia). Explain dependence.
- Diagram the spatial spread of a contagious disease through a population (e.g., the spread of cholera in England in the mid-19th century, and AIDS is in Asia in the 1990s).

STANDARD 2

PLACES AND REGIONS

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

2.1 Students know the physical and human characteristics of places.

Demonstrated, for example, when students:

- Use maps, graphs, satellite-product images or tables to make inferences about the causes and effects of changes over time in physical landscapes (e.g., forest cover, water distribution, temperature fluctuation).
- Use field observation, maps, and other tools to identify and compare the human characteristics of places (e.g., cultural characteristics such as religion, language, politics, population characteristics).
- Identify and analyze how technology shapes the physical and human characteristics of places.

2.2 Students know how and why people define regions.

Demonstrated, for example, when students:

- Explain how regions change over space and time.
- Explain the importance of trade and other connections between regions in the U.S. and the world, using maps, tables and graphs.

2.3 Students know how culture and experience influence people's perceptions of places and regions.

Demonstrated, for example, when students:

- Explain the enduring interest of immigrants in the U.S. in holding onto the customs of their home countries.
- Explain how technology affects the ways in which cultural groups perceive and use places and regions.

Part 1 Benchmarks

STANDARD 3

NATURAL SYSTEMS

Students understand how physical processes shape Earth's surface patterns and systems.

3.1 Students know the physical processes that shape Earth's surface patterns.

Demonstrated, for example, when students:

- Explain the distribution of different ecosystems and their impact on human populations.
- Analyze the importance of distance in influencing spatial interaction and patterns of features on the Earth's surface.

3.2 Students know the characteristics and distributions of physical systems of land, air, water, plants and animals.

Demonstrated, for example, when students:

- Describe and compare physical patterns in terms of the processes that created them.
- Describe the processes that produce renewable and non-renewable Earth resources, and relate the distribution of such resources to the processes that produce them.

STANDARD 4

HUMAN SYSTEMS

Students understand how economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

4.1 Students know the characteristics, location, distribution and migration of human populations.

Demonstrated, for example, when students:

- Analyze population characteristics for selected places on Earth to describe world population patterns.
- Describe patterns of historic and contemporary migration (e.g., rural to urban, intraurban).
- Describes the distribution of population at a range of scales.
- Describe the ways in which population migration influences the character of a place.

4.2 Students know the nature and spatial distribution of cultural patterns.

Demonstrated, for example, when students:

- Describe and analyzes world cultures.
- Analyze examples of cultural change to identify the geographic and historical factors that influenced the change.
- Explain how culture affects the way of life of different groups of people.
- Describe how cultures and societies change.

4.3 Students know the patterns and networks of economic interdependence.

Demonstrated, for example, when students:

- Analyze and evaluate spatial aspects of systems to deliver goods and services.
- Analyze and evaluate issues related to the spatial distribution of economic activities.
- Describe and analyze patterns of primary activities.
- Identify and explain the factors influencing industrial location.
- Identify and explain the primary causes for world trade and the key elements in the systems that support it.
- Analyze historical and contemporary patterns of origin and destination networks.
- Compare and evaluate historical and contemporary systems of transportation and communication designed to enable economic activities.

4.4 Students know the processes, patterns, and functions of human settlement.

Demonstrated, for example, when students:

- Develop and test generalizations about location and growth of settlements over time.
- Compare urban, suburban and rural settlements in different regions of the world.
- Locate and compare settlement patterns in different regions of the world.
- Describe and analyze how different goods and services are offered in settlements of different sizes.
- Locate and analyze the process whereby a megalopolis is formed.

4.5 Students know how cooperation and conflict among people influence the division and control of Earth's surface.

Demonstrated, for example, when students:

- Explain why people cooperate and also engage in conflict to divide the Earth's surface into different spaces.
- Analyze divisions on the Earth's surface at different scales.

GRADE LEVEL 8

C • 1.27

Part 1 Benchmarks

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GRADE LEVEL 8

C • 1.28

STANDARD 5

ENVIRONMENT AND SOCIETY

Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution and importance of resources.

5.1 Students know how human actions modify the physical environment.

Demonstrated, for example, when students:

- Describe how the various parts of physical and/or human systems interrelate.
- Trace the way systems change over space and time.
- Predict the probable consequences of a human system.
- Evaluate how environmental changes in land use and technology affect human behavior.
- Analyze ways that humans adapt to the physical environment.

5.2 Students know how physical systems affect human systems.

Demonstrated, for example, when students:

- Analyze ways in which the physical environment places limits on human activity and its effects at the local to global levels.
- Analyze the positive and negative consequences of human interaction with physical systems at different levels of technology.
- Investigate local and large-scale environmental problems.
- Evaluate how urbanization and population growth affects the environment.

5.3 Students know the changes that occur in the meaning, use, location, distribution and importance of resources.

Demonstrated, for example, when students:

- Identify and evaluate various sources of energy development.
- Evaluate multiple viewpoints regarding resource use.
- Relate the role of resources to changing settlement patterns in the U.S. and in other countries.
- Identify and develop plans for the management and use of renewable and non-renewable resources.

STANDARD 6

USES OF GEOGRAPHY

Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

6.1 Students know how to apply geography to understand the past.

Demonstrated, for example, when students:

- Demonstrate understanding of how territories grow and change.
- Analyze how explorers influenced settlement in the U.S.
- Trace migration of various ethnic groups to the U.S. and the evolution of ethnic neighborhoods of major U.S. cities.
- Analyze and evaluate the impact of physical and human geographic factors on major historical events.
- Explain how competition for resources causes conflict.

6.2 Students know how to apply geography to understand the present and plan for the future.

Demonstrated, for example, when students:

- Describe and compare ways of life in different regions using social, political, economic and environmental data.
- Explain and discuss the need for responsible environmental management practices.
- Interpret crisis situations in the world that result from conflict over the uses of the physical environment.
- Describe and analyze appropriate human-environmental resource issues to make informed decisions.

Part 1 Benchmarks

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GRADE LEVEL 8

A Special Interest in Land Use

by Chris Elnicki, Thunder Ridge Middle School
Cherry Creek School District

C • 1.29

Task:

Groups or individuals in the class select or are given one environmental group to investigate. The information will be gathered from research in the media center or through "surfing the Internet." After they have completed their research, students will create a matrix with the following categories: a profile of the group, membership information, problems addressed by the group, locations of these problems, land use issues and effects, actions being taken by the group, and their view of long term implications and possible solutions. Once the matrix is complete, students should generate a list of geographic questions which can be answered using the matrix.

Overview:

In recent years many special-interest groups have emerged in the United States. These groups have influenced or attempted to influence many aspects of land use. This unit investigates where these groups are concentrating their efforts and the different viewpoints people have about public lands and resources.

Inquiry Question:

How do special-interest groups influence land use decisions?

Standard:

5 **Environment and Society** — Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution, and importance of resources.

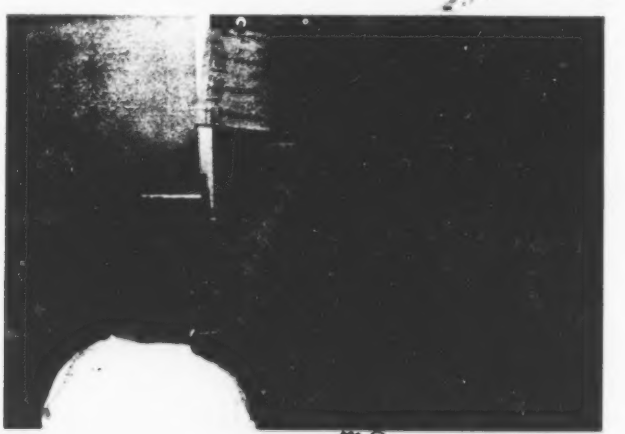
Skills:

- map skills
- acquiring data about people's geographic activities
- obtaining statistical data
- preparing tables, graphs, maps, and oral reports
- identifying relevant questions
- practice in distinguishing geographic from nongeographic questions

Assessment:

Students will take part in a role-play situation where they represent different environmental groups competing for a $1,000,000 endowment. Plans will be presented to a board of directors interested in helping an environmental concern. Presentations will explain the nature of the problem and outline how funds will be beneficial. Students can select any location(s) in the United States where the group would have a strong interest. Presentations must deal with possible critics of this plan. Plans should detail how much money will be spent and why this is the best way to spend it. An important aspect of the presentations will be the inclusion of maps and charts.

Part 1
Benchmarks



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GRADE LEVEL 8

Student worksheet

Name of Group: _____

Number of members: _____

Profile of the group:

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Problems addressed by the group:

Locations of these problems:

Land use issues and effects:

Actions taken by the group:

View of long term implications:

Possible solutions:

Part 1
Benchmarks

Developmental Profile of Grade Level 9-10 Student

GRADE LEVEL 9-10

C # 1.31

Part 1 Benchmarks

Grade-Level 9-10 students can:

- Apply comparative analysis to make connections between patterns of places and the processes affecting them
- Analyze the effects that external trends and ideas have on a culture
- Analyze international trends and issues and their effect on cultures
- Analyze spatial variations over the Earth's surface and explain differences in people's perceptions of places
- Apply theories and practices associated with business and the economy and analyze complex issues regarding resource use
- Analyze relationships between resource use, economic growth, population, standard of living and ecological impact
- Explain consequences of human modifications to physical environments

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GRADE LEVEL 9-10

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Part 1 Benchmarks

STANDARD 1

SEEING THE WORLD GEOGRAPHICALLY

Students know how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.

1.1 Students know how to use maps, globes and other geographic tools to acquire, process and report information from a spatial perspective.

Demonstrated, for example, when students:

- Compile information from various media and transform the primary data into maps, graphs, and charts (e.g., bar graphs showing wheat production in Argentina over a five-year period)
- Choose and give reasons to use specific technologies to analyze selected geographic problems (e.g., aerial photographs, satellite-produced imagery, and geographic information systems (GIS) to determine the extent of water pollution in a harbor complex in South Africa)
- Use several different ways to account for selected consequences of human/environmental interactions (e.g., in the impact of a tropical storm on a coral island)

1.2 Students develop knowledge of Earth to locate people, places, and environments.

Demonstrated, for example, when students:

- Prepare a sketch map to illustrate the spatial dynamics of contemporary and historical events (e.g., the spread of radiation from the Chernobyl nuclear accident)
- Analyze factors that influence people's preferences about where to live
- Speculate about the differences in people's mental maps based on differences in their life experiences (e.g., the influence of age and sex on how people view housing preferences or public transportation in a city)
- Compare maps of the world using different projections and perceptions of space (e.g., a map centered on the Pacific Ocean or a world map with Australia on the top) to draw conclusions about factors that influence mental maps

1.3 Students know how to analyze the dynamic spatial organization of people, places and environments.

Demonstrated, for example, when students:

- Evaluate reasons why people decide to migrate (e.g., people being influenced by pull factors of the potential destination or by push factors of the home area)
- Explain why optimum plant-location decisions in a commercial economy take into consideration labor costs, transportation costs, and market locations
- Explain how places that are close together usually interact more than places that are far apart because distance imposes costs in money and in time
- Draw conclusions about the roles that different sources of information play in people's decisions to migrate to other countries

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STANDARD 2

PLACES AND REGIONS

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

2.1 Students know the physical and human characteristics of places.

Demonstrated, for example, when students:

- Describe how culture (e.g., toponyms, food preferences, gender roles, resource use, belief systems, modes of transportation and communication) affects the characteristics of places
- Analyze the role of climate (e.g., the effects of temperature, precipitation and wind) in shaping places
- Explain why places have specific physical and human characteristics in different parts of the world (e.g., the effects of climactic and tectonic processes)
- Identify the locational advantages and disadvantages of using places for different activities based on physical characteristics
- Identify how places have been altered by major technological changes (e.g., advances brought about by the agricultural and industrial revolutions)
- Explain how places are made distinctive and meaningful by human activities that alter physical features (e.g., the construction of the interstate highway system in the U.S.)

2.2 Students know how and why people define regions.

Demonstrated, for example, when students:

- Identify the ways in which the concept of a region can be used to simplify the complexity of Earth's space (e.g., by arranging an area into sections to help understand a particular topic or problem)
- Explain why regions once characterized by one set of criteria may be defined by a different set of criteria today (e.g., New England's gradual conversion from a region of small textile mills and shoe factories in the 19th and early 20th centuries to one of high-technology industries in the 1980s and 1990s)
- Identify the physical or human factors that constitute a region (e.g., soils, climate, and vegetation have created the fertile triangle in Russia)
- Explain the ways in which regional systems are interconnected (e.g., similarities in physical and cultural characteristics used in selecting "sister cities")

STANDARD 2

PLACES AND REGIONS

Continued

2.3 Students know how culture and experience influence people's perceptions of places and regions.

Demonstrated, for example, when students:

- Explain how places and regions are stereotyped (e.g., how all of Appalachia is associated with poverty).
- Explain how increases in income, longer life expectancy and attitudes toward aging influence where people choose to live.
- Identify how places take on symbolic meaning (e.g., Jerusalem as a holy city for Muslims, Christians and Jews).

STANDARD 3

NATURAL SYSTEMS

Students understand how physical processes shape Earth's surface patterns and systems.

3.1 Students know the physical processes that shape Earth's surface patterns.

Demonstrated, for example, when students:

- Evaluate the long-term effects of the human modification of ecosystems (e.g., how acid rain resulting from air pollution affects water bodies and forests).
- Analyze the distribution of ecosystems by interpreting relationships between soil, climate, and plant and animal life.
- Describe how forces from within Earth (e.g., tectonic processes such as volcanic activity and earthquakes) influence the character of places.

3.2 Students know the characteristics and distributions of physical systems of land, air, water, plants and animals.

Demonstrated, for example, when students:

- Describe the physical processes (e.g., erosion, folding and faulting, volcanism) that produce distinctive land forms.
- Explain the distribution of different types of climate (e.g., marine climate or continental climate) that is produced by such processes as air-mass circulation, temperature, and moisture.
- Describe how physical processes affect different regions of the world, such as the destructive effects of hurricanes in the Caribbean or of desertification and soil degradation.

STANDARD 4

HUMAN SYSTEMS

Students understand how economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

4.1 Students know the characteristics, location, distribution, and migration of human populations.

Demonstrated, for example, when students:

- Evaluate the impact of human migration on physical and human systems.
- Explain how international migrations are shaped by push and pull factors (e.g., political conditions, economic incentives, religious values, family ties).

4.2 Students know the nature and spatial distribution of cultural patterns.

Demonstrated, for example, when students:

- Describe how communications and transportation technologies contribute to cultural convergence (e.g., how electronic media etc. connect distant places through cross-cultural adaptation) and also stimulate cultural divergence (e.g., how culture groups use such technologies to reinforce nationalistic or ethnic elitism).
- Identify the human characteristics that make specific regions of the world distinctive (e.g., the effects of early Spanish settlement in the southwestern United States).
- Explain the importance of religion in identifying a culture region (e.g., the impact of Buddhism in shaping social attitudes in Southeast Asia). Analyze demographic data (e.g., birthrates, literacy rates, infant mortality rates) to describe a region's cultural characteristics (e.g., level of technological achievement, cultural traditions, social institutions).
- Identify the cultural characteristics that link regions (e.g., the religious and linguistic ties between Spain and parts of Latin America).

4.3 Students know the patterns and networks of economic interdependence.

Demonstrated, for example, when students:

- Explain why some places have locational advantages as assembly and/or parts distribution centers (e.g., electronics assembly in northern Mexico).
- Evaluate the importance of government policies for geographical patterns of international trade. Discuss the establishment of trading blocs, preferential trading arrangements, the use of tariffs and quotas and the formation of international cartels.
- Identify some commonly suggested reasons for the increasing interdependency of national economies.

Continued on next page

GRADE LEVEL 9-10

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Part 1 Benchmarks

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GRADE LEVEL 9-10

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STANDARD 4
HUMAN SYSTEMS

Continued from previous page

4.4 Students know the processes, patterns and functions of human settlement.

Demonstrated, for example, when students:

- Trace changes in the locations of ethnic neighborhoods in a city to draw general conclusions about the settlement patterns of immigrant groups in terms of such factors as proximity to the central business district, location in marginal housing areas and lack of access to areas with job opportunities.
- Analyze the site and situation of selected cities in different regions of the world (e.g., Sydney's harbor location, Denver as the Mile High City, Montreal as an island city).
- Use aerial photographs, topographic maps and census data to learn about land uses in the students' own city or in another city in the same region, and then speculate about the city's primary function within its region.

4.5 Students know how cooperation and conflict among people influence the division and control of Earth's surface.

Demonstrated, for example, when students:

- Explain why some countries are landlocked (e.g., as a consequence of war between rival countries, isolation owing to the size of land masses, or racial and cultural divisions).
- Identify the cultural factors that have promoted political conflict (e.g., the national, ethnic, and religious differences that led to conflict in sub-Saharan Africa in the 1960s).

STANDARD 5
ENVIRONMENT AND SOCIETY

Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution and importance of resources.

5.1 Students know how human actions modify the physical environment.

Demonstrated, for example, when students:

- Analyze the role of people in decreasing the diversity of flora and fauna in a region (e.g., the impact of acid rain on rivers and forests in southern Ontario, the effects of toxic dumping on ocean ecosystems).
- Describe the spatial consequences, deliberate and inadvertent, of human activities that have global implications (e.g., the dispersal of animal and plant species worldwide, increases in runoff and sediment).
- Develop possible solutions to scenarios of environmental change induced by human modification of the physical environment.

5.2 Students know how physical systems affect human systems.

Demonstrated, for example, when students:

- Analyze examples of changes in the physical environment that have reduced the capacity of the environment to support human activity.

5.3 Students know the changes that occur in the meaning, use, location, distribution and importance of resources.

Demonstrated, for example, when students:

- Describe how settlement patterns are altered as a result of the depletion of a resource (e.g., the creation of ghost towns in the mining areas of Colorado).
- Describe how patterns of settlement are associated with the location of discovery and development of resources.
- Identify the ways in which resources can be used and recycled (e.g., geographic issues involved in dealing with toxic and hazardous waste at local and global levels).
- Explain the geographic consequences of the development and use of various forms of energy (e.g., renewable, non-renewable, and flow resources).
- Evaluate the short- and long-term economic prospects of countries that rely on exporting non-renewable resources.

STANDARD 6
USES OF GEOGRAPHY

Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

6.1 Students know how to apply geography to understand the past.

Demonstrated, for example, when students:

- Analyze the ways in which physical and human features have influenced the evolution of significant historic events and movements (e.g., historical and geographical forces responsible for the Industrial Revolution in England in the late 18th and early 19th centuries).

6.2 Students know how to apply geography to understand the present and plan for the future.

Demonstrated, for example, when students:

- Develop plans to solve local and regional problems that have spatial dimensions.
- Use a series of maps or a geographic information system (GIS) to obtain information on soil, hydrology and drainage, sources of water and other factors, and then use the information to choose the best site for a specified toxic waste facility.

Part 1 Benchmarks

GRADE LEVEL 9-10

International Student Magazine

by Martha Riley, Eaglecrest High School
Cherry Creek School District

C • 1.35

Task/Overview:

International Student Magazine is a year-long portfolio project that the class works on periodically as each student applies his/her learnings to a country of his/her choice. Each part of the portfolio serves as a culminating activity for units of study from the classroom. Each student, throughout the year, works on and compiles an international magazine that is structured around topics of physical geography, interdependence, development, population, conflict, the environment, and human rights in a country of their choosing. Besides helping students better understand the topics, a multitude of learning skills are used.

Standards: ALL

1 **Seeing the World Geographically** — Students know how to make and construct maps, globes, and other geographic tools to locate and derive information about people, places and environments.

2 **Places and Regions** — Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

3 **Physical Systems** — Students know how physical processes shape Earth's surface patterns and systems.

4 **Human Systems** — Students understand how economic, political, cultural, and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

5 **Environment and Society** — Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution, and importance of resources.

6 **Applying Geography** — Students apply knowledge of people and places, and environments to interpret the past and present and to plan for the future.

Skills:

- research skills
- mapping
- atlas use (including the use of thematic maps)
- table and chart interpretation
- graphing
- notetaking
- writing and word processing

Assessment:

A portfolio is a collection of student-produced work that serves as evidence of proficiency and is kept together in a folder. Like the artist's portfolio, it represents a range of students' interest and abilities. Portfolios provide tangible evidence of the student's knowledge, abilities, and growth.

The teacher assesses the student's ability to apply his or her learning of geographic content, skills, and issues presented in the units to real-world understanding.

Part 1
Benchmarks

GRADE LEVEL 9-10

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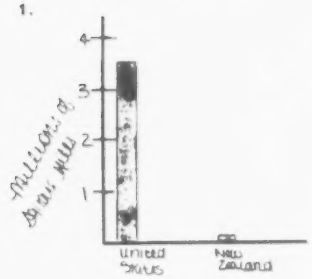
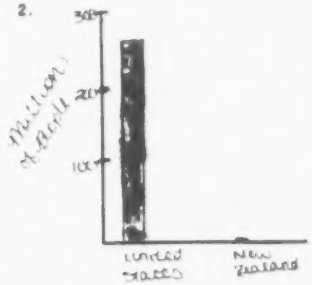
POPULATION COMPARISONS

These graphs show population comparisons between New Zealand and the United States.

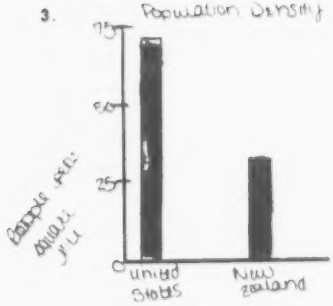
1. Land Area



2. Population Estimate

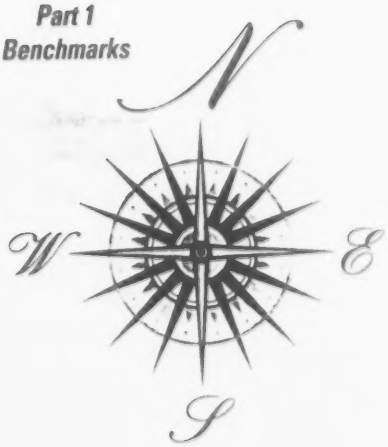


3. Population Density



4. Amount Urban Population

Part 1
Benchmarks



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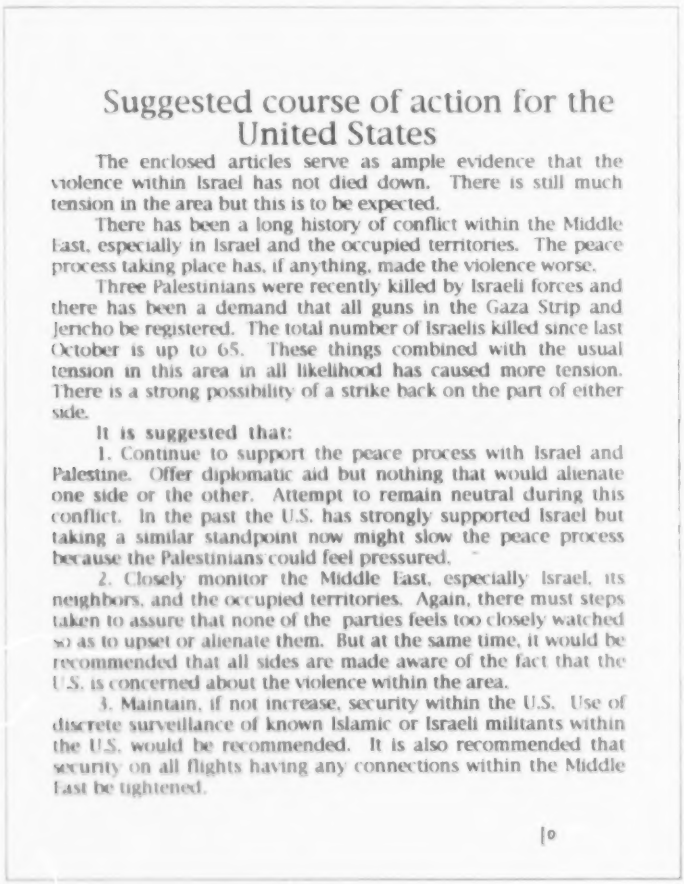
Developmental Profile of Grade Level 11-12 Student

Descriptions of NAEP 1994 Geography Achievement Incorporated into Profile

Grade-Level 11-12 students can:

- Answer complex questions regarding concepts in physical and human geography
- Use geographic concepts to analyze spatial phenomena and discuss economic, political, and social factors that affect Earth's surface through the use of geographic tools, case studies, data bases, and other research materials
- Design world maps based on descriptive data
- Provide detailed descriptions of physical and human characteristics of major world regions
- Offer explanations of how population is related to economic and ecological factors
- Provide analysis of historical and current events within a geographic context using geographic tools



Suggested course of action for the United States

The enclosed articles serve as ample evidence that the violence within Israel has not died down. There is still much tension in the area but this is to be expected.

There has been a long history of conflict within the Middle East, especially in Israel and the occupied territories. The peace process taking place has, if anything, made the violence worse.

Three Palestinians were recently killed by Israeli forces and there has been a demand that all guns in the Gaza Strip and Jericho be registered. The total number of Israelis killed since last October is up to 65. These things combined with the usual tension in this area in all likelihood has caused more tension. There is a strong possibility of a strike back on the part of either side.

It is suggested that:

1. Continue to support the peace process with Israel and Palestine. Offer diplomatic aid but nothing that would alienate one side or the other. Attempt to remain neutral during this conflict. In the past the U.S. has strongly supported Israel but taking a similar standpoint now might slow the peace process because the Palestinians could feel pressured.

2. Closely monitor the Middle East, especially Israel, its neighbors, and the occupied territories. Again, there must steps taken to assure that none of the parties feels too closely watched so as to upset or alienate them. But at the same time, it would be recommended that all sides are made aware of the fact that the U.S. is concerned about the violence within the area.

3. Maintain, if not increase, security within the U.S. Use of discrete surveillance of known Islamic or Israeli militants within the U.S. would be recommended. It is also recommended that security on all flights having any connections within the Middle East be tightened.

10

Supplemental resource used for developmental level bullets was, "Studies of Society and Environment — A Curriculum Profile of Australia Schools."

GRADE LEVEL 11-12

C • 1.38

Part 1 Benchmarks

STANDARD 1

SEEING THE WORLD GEOGRAPHICALLY

Students know how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.

1.1 Students know how to use maps, globes and other geographic tools to acquire, process and report information from a spatial perspective.

Demonstrated, for example, when students

- Develop maps and graphs to show the spatial relationship within and between regions (e.g., transportation networks illustrating rail, air, and highway connections between northern and southern Europe)
- Develop maps, tables, graphs, charts and diagrams to depict the geographic implications of current world events (e.g., maps showing changing political boundaries and tables showing the distribution of refugees from areas affected by natural disasters)

1.2 Students develop knowledge of Earth to locate people, places, and environments.

Demonstrated, for example, when students

- Analyze world patterns of the diffusion of phenomena (e.g., contagious diseases or religion) to draw conclusions about spatial interactions (trade and transportation) in the present-day world
- Present decisions concerning sites for new facilities (e.g., locating houses in areas with scenic views, selecting a building site in a dramatic physical setting for a house of worship in a new suburban community)

1.3 Students know how to analyze the dynamic spatial organization of people, places and environments.

Demonstrated, for example, when students

- Speculate about the differences in people's mental maps based on differences in their life experiences (e.g., the influence of age and sex on how people view housing preferences or public transportation in a city)
- Analyze the patterns of trade between countries to explain the concept of complementarity (e.g., lumber from United States to Japan and consumer electronics goods from Japan to the United States)

STANDARD 2

PLACES AND REGIONS

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

2.1 Students know the physical and human characteristics of places.

Demonstrated, for example, when students

- Describe and interpret the importance of erosional processes in shaping places (e.g., the cliffs of Malibu or the sand dunes of Cape Cod)

2.2 Students know how and why people define regions.

Demonstrated, for example, when students

- Explain how functional regions are held together (e.g., by nodal centers such as a neighborhood coffee shop, city hall, or suburban shopping mall)
- Identify some of the reasons for changes in the world's political boundaries (e.g., the frequently changing political boundaries of Poland over the centuries owing to Poland being partitioned by stronger neighbors)
- Identify and explain the criteria that gave regions their identities in different periods of U.S. and world history (e.g., the cotton South prior to the Civil War)
- Identify places participating in past- and present regional alliances (e.g., the central powers in World War I, and the European Union in the 1990s) or evaluate the advantages and disadvantages of these alliances from the perspective of their member states
- Explain how physical and human environments form webs of interacting systems within and among regions (e.g., the use of dams and levees to create the Tennessee Valley Authority)

2.3 Students know how culture and experience influence people's perceptions of places and regions.

Demonstrated, for example, when students

- Speculate on how the socioeconomic backgrounds of people influence their points of view about a place or a region
- Explain how shifts from a predominantly rural to a predominantly urban society influence the ways in which people perceive an environment (e.g., rural settings becoming attractive as recreation areas to people living in densely populated cities)
- Explain how point of view influences a person's perception of a place (e.g., how various ethnic groups have a point of view about what constitutes an ideal residential landscape)

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STANDARD 3

NATURAL SYSTEMS

Students understand how physical processes shape Earth's surface patterns and systems.

3.1 Students know the physical processes that shape Earth's surface patterns.

Demonstrated, for example, when students:

- Evaluate the long-term effects of the human modification of ecosystems (e.g., how acid rain resulting from air pollution affects water bodies and forests).
- Evaluate the carrying capacity of different ecosystems in relation to land-use policies (e.g., the optimal number of cattle per square mile in a grassland).
- Characterize ecosystems by their level of biodiversity and productivity (e.g., the low productivity of deserts and the high productivity of mid-latitude forests).

3.2 Students know the characteristics and distributions of physical systems of land, air, water, plants and animals.

Demonstrated, for example, when students:

- Describe how physical processes affect different regions of the worlds, (e.g., dust storms, floods, earthquakes).
- Explain the effects of different physical cycles (e.g., world atmospheric circulation, ocean circulation) on the physical environment of Earth.
- Identify the conditions that cause changes in climate and the consequent effects on ocean levels, agricultural productivity and population distribution.

STANDARD 4

HUMAN SYSTEMS

Students understand how economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

4.1 Students know the characteristics, location, distribution, and migration of human populations.

Demonstrated, for example, when students:

- Evaluate past and present government policies designed to change a country's population characteristics (e.g., the ongoing policies to limit population growth).
- Explain how government population policies are linked to economic and cultural considerations (e.g., the belief systems of the people).
- Evaluate the impact of human migration on physical and human systems.
- Explain why countries develop emigration and immigration policies.

4.2 Students know the nature and spatial distribution of cultural patterns.

Demonstrated, for example, when students:

- Evaluate examples of the spread of cultural traits that contribute to cultural convergence (e.g., U.S.-based fast-food franchises in Russia and Eastern Europe, the English language as a major medium of communication for scientists and business people in many regions of the world).
- Compare the economic opportunities for women in selected regions of the world, using culture to explain the differences.

4.3 Students know the patterns and networks of economic interdependence.

Demonstrated, for example, when students:

- Analyze the spatial relationships between land values and prominent urban features (e.g., central business districts, open spaces near public parks) and prominent natural features (e.g., waterfronts, land elevation, prevailing wind direction).
- Evaluate the advantages and disadvantages of allowing foreign owned businesses to purchase land, open factories or conduct other kinds of business in a country.
- Identify and analyze the historical movement patterns of people and goods and their relationships to economic activity (e.g., European colonial initiatives resulting in sugar plantations in the Caribbean).
- Describe the characteristics of traditional, command and market economic systems and describe how such systems operate in specific countries (e.g., describe North Korea as a command economy).

4.4 Students know the processes, patterns and functions of human settlement.

Demonstrated, for example, when students:

- Identify urban forms that characterize recent changes in urban structure (e.g., the rise of megalopoli, edge cities, metropolitan corridors).
- Identify the characteristics of cities in developing countries and compare them to those of cities in developed countries in terms of physical features, site, situation, function, internal structure and other geographic factors.
- Predict the impacts of population growth or decline on an urban area in terms of such factors as the stress on infrastructure, problems of providing efficient and effective public safety and fire protection, availability of jobs, demands placed on the tax base.
- Identify those ways in which a city has remained the same for many years, as well as those ways it has changed (e.g., on the basis of histories, old newspapers, public records, maps, etc.).

4.5 Students know how cooperation and conflict among people influence the division and control of Earth's surface.

Demonstrated, for example, when students:

- Explain how a country's ambition to obtain markets and resources can cause fractures and disruptions in areas of the world that are targets of its ambition (e.g., the consequences of French colonization of Indochina in the 19th century to procure tin, tungsten, and rubber).
- Illustrate how religious conflict or expansion can cause political and cultural changes in a region.
- Identify the causes of boundary conflicts and internal disputes between cultural groups.
- Explain how cooperation and/or conflict can lead to the allocation of control of Earth's surface (e.g., the formation and delineation of regional planning districts, regional school districts, countries, and free-trade zones).

GRADE LEVEL 11-12

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Part 1 Benchmarks

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GRADE LEVEL 11-12

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Part 1 Benchmarks

STANDARD 5

ENVIRONMENT AND SOCIETY

Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution and importance of resources.

5.1 Students know how human actions modify the physical environment.

Demonstrated, for example, when students:

- Analyze the positive and negative aspects of landscape changes in the students' local community and region that relate to people's changing attitudes toward the environment (e.g., interest in preserving wilderness areas, support of the concept of historic preservation).
- Compare the ways in which the students' local community modified the local physical environment (e.g., rivers, soils, vegetation, animals, climate) 100 years ago with the current impact on the same environment, and project future trends based on these local experiences.

5.2 Students know how physical systems affect human systems.

Demonstrated, for example, when students:

- Describe and evaluate the carrying capacity of selected regions to predict the likely consequences of exceeding their environmental limits (e.g., the impact of the economic exploitation of Siberia's resource on a fragile sub-arctic environment).
- Identify physical environments in which limits to growth are significant (e.g., extremely cold, arid, or humid tropical climates and mountainous and coastal environments), describe the conditions that may threaten in these environments (e.g., rises in population that place pressure on marginal areas) and then develop plans to alleviate such stresses.
- Evaluate the effectiveness of human attempts to limit damage from natural hazards and explain how people who live in naturally hazardous regions adapt to their environments.

5.3 Students know the changes that occur in the meaning, use, location, distribution and importance of resources.

Demonstrated, for example, when students:

- Evaluate the geographic impacts of policy decisions related to the use of resources (e.g., community regulations for water usage during drought periods).
- Evaluate resource degradation and depletion in less-developed countries from multiple points of view (e.g., different points of view regarding uses of the Malaysian rain forests expressed by a Japanese industrialist and a conservationist with the United Nations food and agricultural organization).
- Discuss how and why some countries use greater than average amounts of resources (e.g., German iron ore imports).
- Identify the ways in which resources can be reused and recycled (e.g., geographic issues involved in dealing with toxic and hazardous waste at local and global levels). Compare recycling laws in various states of the U.S. and other countries to explain people's attitudes toward resource management.
- Explain the relationship between resources and the exploration, colonization and settlement of different regions of the world.

STANDARD 6

USES OF GEOGRAPHY

Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

6.1 Students know how to apply geography to understand the past.

Demonstrated, for example, when students:

- Illustrate how technology has enabled people to increase their control over nature and how that has changed land use patterns.
- Trace the spatial diffusion of a phenomenon and the effects it has had on regions of contact (e.g., the spread of bubonic plague in the world).
- Trace the geographic effects of migration streams and counter-streams (e.g., rural African-Americans from the south to urban centers in the north and west throughout the 20th century).

6.2 Students know how to apply geography to understand the present and plan for the future.

Demonstrated, for example, when students:

- Explain the extent and geographic impact of changes in the global economy on the lives of affluent and poor people (e.g., in African, Asian, and South American cities) to demonstrate the inequities of urban life, resource use, and access to political and economic power in developing countries.
- Analyze a variety of contemporary issues in terms of Earth's physical and human systems such as the consequences of population growth or decline in a developed economy for both human and physical systems.
- Use geography knowledge and skills to analyze problems and make decisions within a spatial context (e.g., alternatives to irrigated farming in the area served by the Ogallala Aquifer, which has been used too intensively).

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GRADE LEVEL 11-12

Presidential Briefing Book

by R. Keith Lucero, East High School
Denver Public Schools

Task:

Students compile five articles about one of the case-study conflicts investigated in class (Northern Ireland, Bosnia, Israel/Palestine, or Kashmir) and summarize each article. Students must include a discussion of the dispute and a visual representation of the conflict. Students suggest a course of action for U. S. foreign policy and prepare a presidential press statement for release outlining U.S policy regarding this conflict.

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Overview:

The President has advisors who are experts on a region. These are generally reserachers, geographers who keep up to date on the issues and concerns of a place of interest to the United States. Acting as a presidental advisor, compile a file of photocopied clips to share with the President about the conflict in one of the case-study places discussed and studied in class.

Inquiry Question:

How do world events impact U.S. foreign policy?

Standards:

4 **Human Systems** — Students understand how economic, political, cultural, and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

6 **Applying Geography** — Students apply knowledge of people and places, and environments to interpret the past and present and to plan for the future.

Skills:

- Asking geographic questions
- Acquiring geographic information
- Organizing geographic information
- Analyzing geographic information
- Answering geographic generalizations

Assessment:

Task will be graded on a number of criteria, including completeness; thoroughness of understanding the territorial nature of the conflict; and the connection of the United States to this conflict.

Press Statement

Last week the nation was saddened by the news that eight people were killed and more than forty people were injured in Israel. There has been some concern arising in the U.S. because of such violence but I am here to assure you we do not expect this to stop the peace process.

We are saddened by this lose of life, this time possibly more so because among those who died was an American student, Alisa Flatow, and she will be missed. I would like to personally send my condolences to her friends and family. The fact that, in the face of such tragedy, the Flatow family found a way to give joy to others by donating Alisa's organs to people in Israel shows their love of life. I am sure that Alisa's friends and family see now, more than ever, the need for peace in Israel and the occupied territories. It is my hope that the peace process will continue on so that one day Alisa's four younger brothers and sisters can walk the streets of a more peaceful Gaza.

There is a sad irony in the fact that Alisa was buried just days before the beginning of Passover. Passover, a Jewish holiday, is a celebration of freedom. It should remind everyone that any type of slavery anywhere hurts us all. The people in the occupied territories, especially those who conspired to and those who committed the bombings have become slaves to violence. I hope that Passover reminds all those in that area. And in fact everyone in the world, that we can make it better. We can free our selves by freeing others. It is this hope for freedom that has kept me dedicated to peace all my life and I ask that America join me in encouraging peace throughout the world.

We will continue assisting in the peace talks between Israel, its neighbors, and the Palestinians. We will help with the investigation into the bombings so that whom ever is responsible for the murder of Alisa Flatow and seven others is stoped. We applaud the efforts of Yasser Arafat and the Palestinian government in cracking down on the violence and demanding that all guns be registered or turned in to

Part 1 Benchmarks

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GRADE LEVEL 11-12

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Part 1
Benchmarks

Geography Skills and Perspectives

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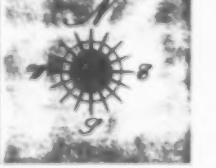


Geography Skills and Perspectives

The "chalk, talk and textbook" approach to teaching and learning is still a valid way of teaching, but it is just one of an expanding number of approaches to facilitating student learning. Recent research on how children learn; the creation of higher standards; developments in technology; and building communities of learners for both students and teachers — all have the potential to contribute to a vast improvement in the quality and diversity of learning. Such changes will put an increased emphasis on inquiry learning and skill development.

Issues-Based and Inquiry-Oriented

Is there an answer to the current debate between disciplinary and integrated teaching? Perhaps developing courses that are issues-based and inquiry-oriented — and which do not compromise the integrity of the disciplines — would provide an answer. This approach serves the broad goals of the social studies in this country: to teach citizenship, disciplined knowledge and critical and reflective thinking (Hill and Wanner, 1991). The "doing geography" approach leads to outcomes that represent significant cognitive, affective and skill learning. High value is placed on active learning and high-level thinking. When students grapple with issues and questions, the curriculum lends itself to developing skills such as:

- Drawing conclusions from data
- Forming an opinion
- Writing in a coherent manner
- Accessing information from printed and electronic data
- Analyzing, synthesizing and applying information

Students also learn that there is not just one right answer to an issue — in life, they will be asked to form opinions based on limited information. An inquiry-oriented, issues-based curriculum lends itself to actively engaging students in lessons and to addressing current international issues, such as environmental problems, population growth, land use and resource development.

A lesson taught in World Geography classes at Eaglecrest High School in the Cherry Creek School District provides a concrete example. The following scenario is outlined for students:

A disaster has occurred in Germany involving a 30-ton toxic chemical spill into the Rhine River. Millions of fish have been killed and the drinking water supply of countries along its course are threatened. Students become members of the Rhine River Commission organized to deal with the problem and to represent their countries' interests.

The issues are man's impact on the environment — how does man affect a river system, and how does a river system affect man? — and how an incident in one country can affect other countries. Students must decide in a participatory manner who is at fault, and who should pay the damages, and then discuss what can be done to prevent further disasters.

Another possible scenario: France wants to build a new chemical plant on a river that is a tributary to the Rhine River. Should other nations be concerned?

Skill Development

Developing geographic skills requires systematic use of the process of inquiry illustrated more fully in the charts below. These geographic skills, which reflect the

scientific method, have gained wide acceptance as a model for skill development since they first appeared in the *Guidelines for Geographic Education* in 1984. The skills are:

- **Asking geographic questions.** The ability and willingness to ask, speculate on and answer questions about why things are where they are and how they got there.
- **Acquiring geographic information.** Gathering information from a variety of sources in a variety of ways; reading and interpreting all kinds of maps; compiling information and collecting data from interviews, field work, reference material and research.
- **Organizing geographic information.** Once collected, the geographic information should be organized and displayed in ways that enhance analysis and interpretation. Different data should be separated and classified in visual and graphic forms.
- **Analyzing geographic information.** Seeking patterns, relationships and connections to allow students to synthesize their observations into a clear explanation.
- **Answering geographic questions.** Developing generalizations and conclusions based on the data collected, organized and analyzed. Skills include the ability to make inferences and to distinguish generalizations among different places.

These five skills provide a framework for organizing the content standards. The skills, although broken down into five separate headings, should not be viewed as isolated, discrete skills, but should be practiced and mastered in a way so students understand that geographic inquiry is a way of thinking that requires methods of analysis and observation.

Grade 4: Summary of Skills

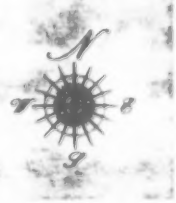
Ask Geographic Questions	Acquire Geographic Information	Present Geographic Information	Analyze Geographic Information	Develop & Test Geographic Generalizations
Ask geographic questions (e.g., Where is it located? What is it like there? Why is it there? How did it get there?) Distinguish between geographic & non-geographic questions	Locate, gather, & process information from a variety of sources including maps Observe human & physical characteristics of places in the classroom & field	Prepare maps to present geographic information Construct graphs, tables & diagrams to present geographic information Make oral & written reports, accompanied by maps, graphics & other geographic data, to present geographic information	Use tables, charts & graphs to observe & analyze trends & relationships Use maps to observe, analyze & interpret geographic information Interpret texts, photos, documents & other sources of information Use simple mathematics to analyze geographic data	Draw conclusions & make generalizations from geographic information & inquiry Apply generalizations to solve problems & make reasoned decisions

Grade 8: Summary of Skills

Ask Geographic Questions	Acquire Geographic Information	Present Geographic Information	Analyze Geographic Information	Develop & Test Geographic Generalizations
Identify & define geographic questions, issues & problems. Ask appropriate geographic questions and plan & execute a geographic inquiry to answer the questions.	Use a variety of research skills to locate & collect descriptive and statistical data. Use maps to collect & compile information.	Prepare a variety of kinds of maps to present geographic information. Prepare a variety of kinds of graphs to display geographic information. Prepare diagrams, tables & charts of geographic information. Develop & present systematic combinations of geographic information.	Analyze information obtained from a variety of sources (e.g., graphs, charts, tables, diagrams, texts, photographs, documents, interviews) using spatial processes. Interpret & analyze information obtained from maps, aerial photographs, remotely sensed images & geographic information systems. Use statistics & other quantitative skills to evaluate geographic information. Synthesize, analyze & interpret information obtained from a variety of sources (e.g., graphs, charts, tables, diagrams, texts, photographs, documents, interviews).	Develop valid generalizations from geographic information & inquiry. Solve problems by applying generalizations that represent a variety of different perspectives & suggest multiple solutions to problems.

Grade 12: Summary of Skills

Ask Geographic Questions	Acquire Geographic Information	Present Geographic Information	Analyze Geographic Information	Develop & Test Geographic Generalizations
Plan and organize a geographic research project, e.g., specify a problem, pose a research question or hypothesis, identify areas in need of investigation & identify procedures for testing the hypothesis or answering the question.	Systematically locate & gather geographic information from a variety of primary & secondary sources. Systematically organize geographic information.	Create & use a variety of kinds of maps to present geographic information. Create & use a variety of graphs, diagrams, tables & charts to present geographic information. Develop & present systematic combinations of geographic information.	Interpret (involving analysis, synthesis, evaluation & explanation) geographic information from a variety of sources. Use quantitative skills of analysis to interpret geographic information & explain it in verbal & written form. Make inferences & draw conclusions from maps & other visual representations.	Formulate valid generalizations from geographic information & inquiry. Apply generalizations to evaluate & solve problems based on reasoned decision-making & to identify areas in need of further investigation. Apply geographic models, generalizations & theories to analyze & interpret geographic information & to develop new hypotheses.



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Assessing the Acquisition of Skills and the Understanding of Issues

Teachers are encouraged to use assessments related to performance to measure student knowledge and understanding. New and different ways to evaluate students, sometimes called authentic assessments, require students to demonstrate their ability to integrate knowledge and skills in a performance; for example, portfolios that document the student's progress toward mastery of content and skills, or projects that require students to develop and practice the process of geographic inquiry.

If the curriculum is centered around issues, the assessment needs to be centered around issues, not "where is this place located?" Authentic assessment challenges students to grapple with real-life tasks. Hands-on geography requires hands-on assessment and evaluations.

Perspectives

The role of perspectives in geography education is intriguing. We hear that there is a unique geographic perspective or that perspective is an essential part of geography. Just what do we mean by that?

The Geography Assessment Framework for the 1994 National Assessment for Educational Progress states: "As an active mode of inquiry, an understanding of geography enables students to view issues regarding people and places from multiple perspectives through travel, books, newspapers, television and other media."

A perspective is a way of looking at one's world and its characteristics. A person capable of appreciating other perspectives can use it as a way of gaining knowledge and making valid social decisions. For example, land-use planning may be viewed in different ways by a farmer nearing retirement age, a land developer, a planning official, a state legislator running for re-election or an environmentalist interested in preserving forests and wetlands. The multiple perspectives brought to bear on land-use decisions by members of this group are shaped by a combination of personal experiences and community interests.

In order for students to effectively solve the problem exemplified in the Eaglecrest lesson, "Disaster on the Rhine," they had to understand multiple national perspectives. Participation in community, national and world-wide decision making is an important aspect of citizenship that is aided by geographic knowledge, skills and perspectives. Awareness of various perspectives is essential to being a geographically informed person.

Conclusion

There's no doubt that implementing meaningful standards in geography and social studies classrooms will be a major challenge.

The message must go out to Colorado's teachers that they can no longer merely drill students with more names, dates and places, but instead must focus on developing the analytical and critical-thinking skills of students. Standards provide the opportunity for educators around the state and the nation to become aware of what is important to learn, to teach and to assess in geography.

PART 2
Charting a New Course

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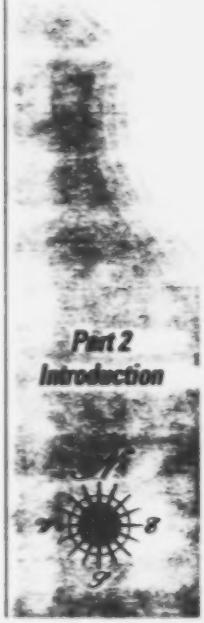
Introduction



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Introduction ..... **Section A**

Three Exemplary Units ..... **Section B**

Grasslands: A Natural Resource ..... B • 1

Kids' Community Guide ..... B • 2

Are We Trading Away Our Rain Forests? ..... B • 3

Curriculum ..... **Section C**

Planning a Standards-Based Unit: A Professor's Perspective ..... C • 1

How to Develop a Unit of Instruction Based on the Geography Standards ..... C • 2

How to Analyze a Curriculum for Gaps and Repetitions ..... C • 3

How to Select Exemplary Curriculum Materials and/or Incorporate the Standards Into Existing Materials ..... C • 4

Assessment ..... **Section D**

Designing Authentic Assessments ..... D • 1

Instruction ..... **Section E**

Thinking Spatially ..... E • 1

Geography and Technology ..... E • 2

Stimulating Parent Support and Involvement ..... E • 3

Using the Local Community: Field Studies vs. Field Trips ..... E • 4

Geography Standards, Instruction and Competencies for the World of Work ..... E • 5

Special Populations ..... **Section F**

Geography Curriculum Frameworks and Special Populations ..... F • 1

Opportunities to Learn for Students Who are Gifted/Talented ..... F • 2

Opportunities to Learn for Students With Learning Disabilities ..... F • 3

Opportunities to Learn for Students With Limited English Proficiency ..... F • 4

Perspectives ..... **Section G**

A Teacher's Viewpoint ..... G • 1

How a Teacher Got Me Interested In and Excited About Geography ..... G • 2

A Building Administrator's View of the Standards ..... G • 3

The Perspective of the Local Board of Education ..... G • 4

A map says to you,
'Read me carefully,
follow me closely, doubt me not.'
It says, 'I am the earth in the palm of your hand.
Without me you are alone and lost.'

— Beryl Markham,
West With the Night

The material in this section was written ***by*** educators, ***for*** educators. It focuses on the nuts and bolts of designing standards-based geography curriculum, instruction and assessment from the point of view of the classroom teacher, the curriculum coordinator, the building administrator, the district superintendent and the local school board.

This section begins with a look at three outstanding examples of how the individual strands of the K-12 geography standards can be woven into a coherent unit of instruction focused on active student inquiry, analysis and problem-solving.

The **Three Exemplary Units** include "Grasslands: A Natural Resources," an elementary-school unit written by Janet Pommrehn, a Denver Public Schools teacher; "Kids' Community Guide," a middle-school unit written by Nancy Morlock-Hollins and Marsha Spanswick of Colorado Springs District 11; and "Are We Trading Away Our Rain Forests?," a high-school unit designed by Ginny Jones of the St. Vrain Valley Schools.

These three model units are followed by a series of articles written by K-12 and postsecondary educators that will take you, step by step, through the various challenges and tasks involved in designing such units. The **Curriculum** chapter, for example, outlines how to plan and develop a standards-based unit, and provides suggestions on how to analyze existing curriculum and instructional materials in light of the new standards. The **Assessment** chapter focuses on the mechanics of designing assessments that allow teachers to reliably

evaluate and monitor students' progress toward the standards.

The **Instruction** chapter explores the impact of standards on teachers, and takes a look at some of the skills and strategies they will need to use the standards effectively: integrating subject matter rather than compartmentalizing it; using technology, hands-on projects and original material rather than relying solely on textbooks; and designing ways to more actively involve parents in their child's education.

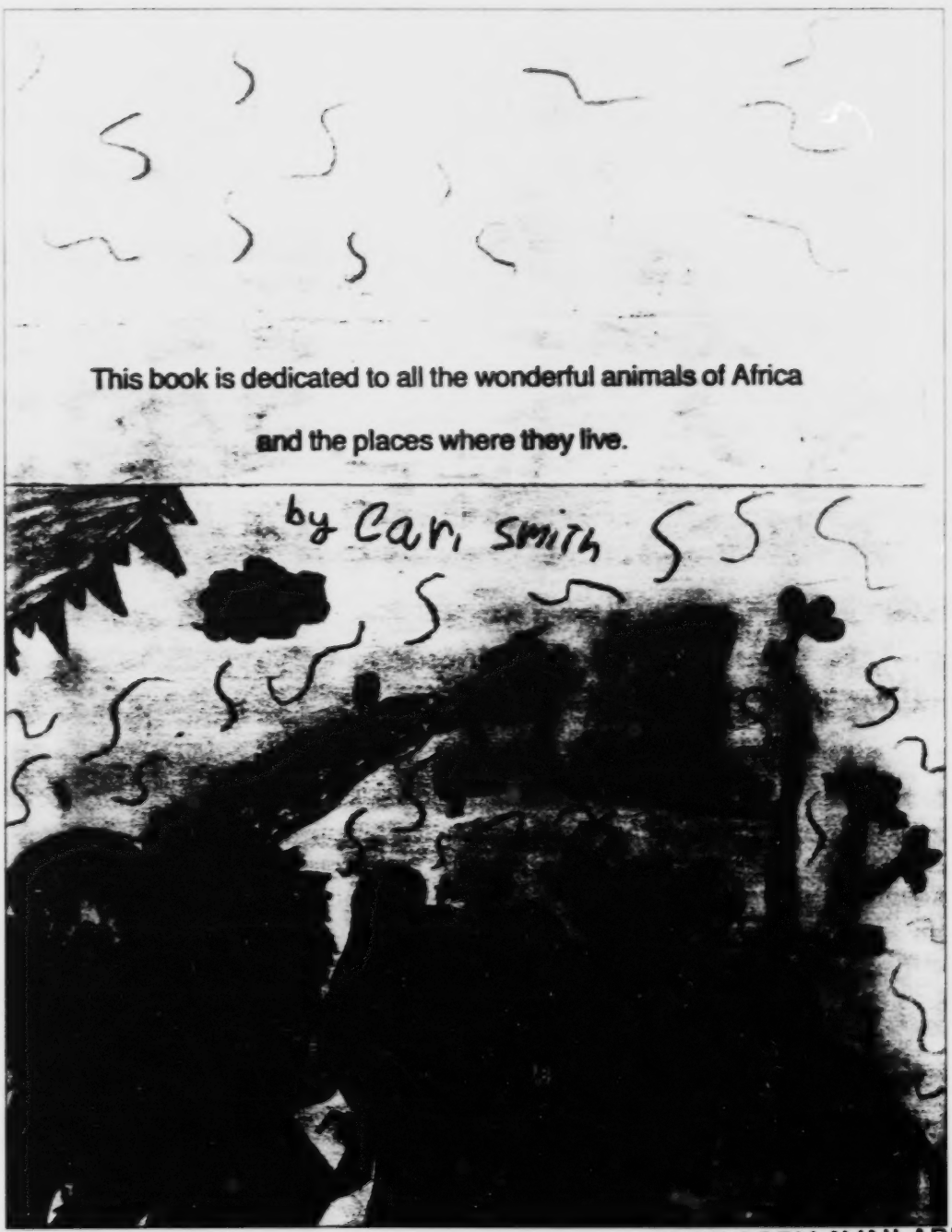
Also included is a chapter on **Special Populations**, which provides a variety of ideas and suggestions for tailoring standards-based lessons and assessments to the needs of gifted students, learning-disabled students and those with limited proficiency in English.

This section concludes with an assortment of observations about the new geography standards. In **Perspectives**, we look at the importance, value and longterm potential of standards from the viewpoint of a classroom teacher, a student, a curriculum coordinator, a principal and a local school board member.

Three Exemplary Units

Grasslands: A Natural Resource

Elementary School Unit



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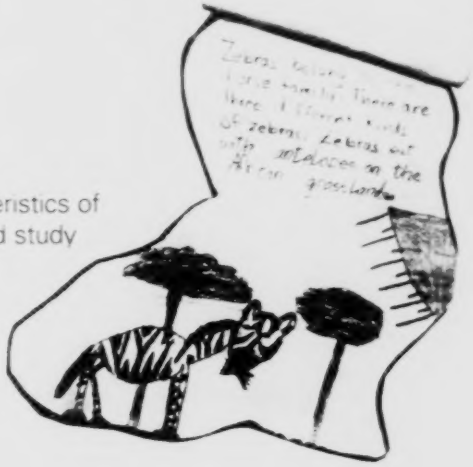
Overview

Grasslands are the world's best places to grow food. Getting food becomes a problem as our population increases and land is plowed under to make room for people. This unit teaches about two grasslands (Colorado and Kenya) and ends with the class analyzing the future of one of Earth's most precious natural resources.

Grade /Course

Grades 1-5



State Standard(s)

#2: Places and Regions

Students know the physical and human characteristics of places and can use this knowledge to define and study regions and their patterns of change.

Essential concepts embedded in this standard:

2.1 the physical and human characteristics of places

2.2 how and why people define regions

#6: Applying Geography

Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

Essential concepts embedded in this standard:

6.1 how to apply geography to understand the past

6.2 how to apply geography to understand the present and plan for the future

#3: Natural Systems

Students understand how physical processes shape Earth's surface patterns and systems.

Essential concepts embedded in this standard:

3.2 characteristics and distributions of physical systems of land, air, water, plants and animals.

Question

How do the grasslands of the past compare to the grasslands of the present and what is their role in our future?

Location

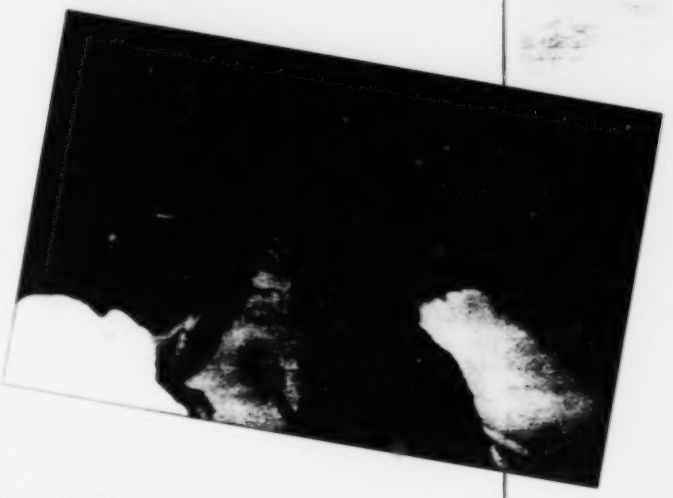
Colorado — Kenya

Integration

Science, music, art, math, language arts

Resources/Materials

Computer with CD-ROM, VCR/TV, globe, primary atlases, world map, Colorado map, art materials, books and computer programs, duplicated worksheets, containers in which to plant grasses (large deli salad containers), potting soil, grass seed



Books

- Any version of *The Little Red Hen.*
- Aardema, Verna. *Bringing the Rain to Kapiti Plain.* 1981.
- Aliki. *Corn is Maize.* 1976.
- Baker, Olaf. *Where the Buffaloes Begin.* 1981.
- Benyus, Janine. *The Field Guide to Wildlife Habitats of the Western U.S.* 1989.
- Catchpole, Clive. *Grasslands.* 1984.
- Dvorak, Jr., David. *A Sea of Grass.* 1994.
- Duncan, Patricia. *Tallgrass Prairie, The Inland Sea.* 1978.
- Gates, Richard. *Conservation (A New True Book).* 1982.
- Greenaway, Theresa. *Grasses and Grains.* 1990.
- Grifalconi, Ann. *The Village of Round and Square Houses.*
- Griffin, M. *A Family in Kenya.*
- Hare, Tony. *Vanishing Habitats.* 1991.
- Horton, Catherine. *A Closer Look at Grasslands.* 1979.
- Hoy, Ken. *Nature Pop-ups Land Life.* 1990.
- Jacobsen, Karen. *A New True Book Kenya.* 1991.
- Johnson, Sylvia. *Animals of the Grasslands.* 1976.
- Kent, Deborah. *Colorado.* 1989.
- Klyce, Katherine and McLean, Virginia. *Kenya, Jambo!* 1989.
- Knapp, Brian. *What Do We Know About Grasslands?* 1992.
- Lerner, Carol. *Seasons of the Tallgrass Prairie.* 1980.
- Lewin, Hugh. *Jafta's Father.*
- Lowery, Linda and Marybeth Lorbiecki. *Earthwise at School.* 1993.
- Mitgutsch, Ali. *From Grain to Bread.* 1971.
- Monroe, Jean and Kay Williamson. *First Houses: Native American Homes and Sacred Structures.*
- Morris, Scott, Consult. Ed. *How to Read a Map.* 1993.

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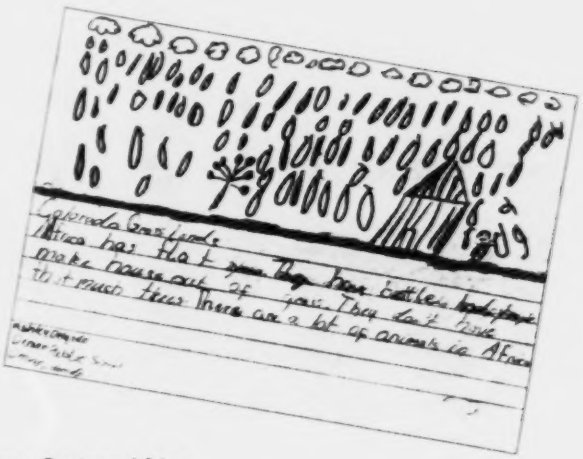
- Newkirk, Ingrid. *Kids Can Save the Animals!* 1991.
- Patent, Dorothy. *Prairie Dogs.* 1993.
- Petty, Kate. *Plains Indians.* 1988.
- Rice, James. *Cowboy Alphabet.* 1990.
- Siy, Alexandra. *Native Grasslands.* 1991.
- Taylor, Dave. *Endangered Grassland Animals.* 1992.
- Thompson, Kathleen. *Colorado.* 1991.
- Wilson, Jim and Alice. *Grassland.* 1967.

CD ROM

- National Geographic:
  - *Picture Atlas of Our World.*
  - *World of Animals.*
  - *World of Plants.*



Videos

- National Geographic:
  - *Lions of the African Night*
  - *Counting with Animals*
  - *Where Animals Live:*
    - *Physical Geography of the Continents Series: Africa*
    - *Physical Geography of North America Series: Western Dry Lands*
    - *Protecting Endangered Animals*
  - *African Wildlife*

Computer

- GeoLinks by MN Alliance for Geographic Education:
  - Lesson 125 *Where are the Animals?* by Paula Verstegen
  - Lesson 126 *Where are the Animals II?* by Paula Verstegen
  - Lesson 189 *The Plains of the US and Kenya* by Ellen Cahill & Tom McBride
  - Lesson 123 *Animals in the Grasslands* by Paula Verstegen
  - Lesson 129 *Where are the OTHER Animals?* by Paula Verstegen

TIME

12-15 class sessions

BENCHMARKS

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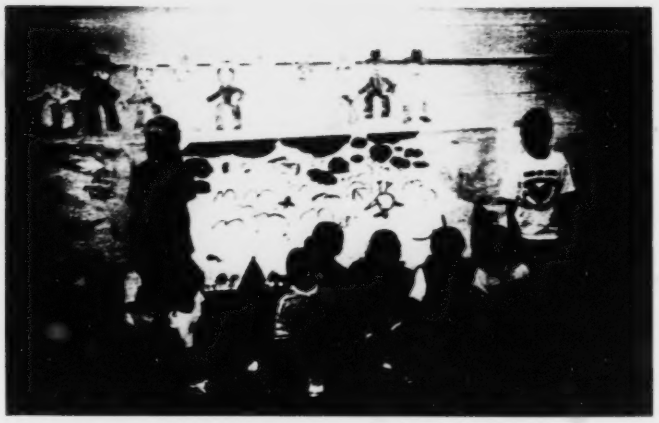
What the students know and are able to do includes:

- Recognition of how different people use regions
- Recognition of weather and climate and their effects on physical environment
- Identification and description of physical and human characteristics of a region and the making of comparisons to other regions



- Analysis of factors that cause a region to change
- Identification of ways humans change ecosystems (e.g., plowing, planting, grazing)
- Identification of the way humans use and interact with ecosystems

Skills

Acquiring geographic information

- Use maps, globes and atlases to find information
- Use video/multi-media/computers to access, gather and organize geographic information

Presenting geographic information

- Describe the similarities and differences between regions
- Explain how physical processes work
- Describe current and past events in geographic context
- Make charts to organize and present geographic information
- Investigate and report on the characteristics of a place
- Investigate and report on changes in a region
- Investigate and report on the interrelationships and processes of an ecosystem

Analyzing geographic information

- Judge the appropriateness of materials
- Predict geographic events from different perspectives

Activities

1. Utilize a number of books/resources about the grasslands (short grass prairie, steppe, long grass prairie, pampa, puszta, veldt, savanna) to provide background knowledge. Chart the types of grasslands and their characteristics. Decide on a definition of grassland. After background is set, concentrate on Colorado short grass prairie and Kenya savanna. Compare and contrast the two.
2. Begin dioramas that will be used in assessment. Select containers that will hold soil and water. Plant grasses NOW so these will be growing at assessment time. Decide

if individual or team assessment will be used so individuals or teams can do the planting. If the group is developmentally ready, different soil mixes could be used to simulate Colorado's short grass prairie soil and Kenya's savanna soil. Plant Colorado grasses in both. Plant savanna grasses in both. Determine which grasses grow in which soil best. Use the Botanic Gardens as a resource, if possible. If this phase is done, add a component to the assessment reflecting these experiments.

3. Review concepts of region. Discuss if grasslands are a region and why. Form seven cooperative learning groups. Assign each group to a continent. Using primary atlases, each group is to investigate if (and where) grasslands are found on that continent. Have groups report findings and draw boundaries on a wall map or on a world outline overhead transparency. Show on a globe. If class is not able to use atlases in teams, do the research as a group. Have each student color the grassland areas on individual black-line world maps. (See handouts.) Put a title on the map and a key.
4. Use atlases and maps of the U.S., Africa, and then Colorado and Kenya to locate grasslands of each. Color grassland areas on individual maps. (See handouts.) Do title and key.
5. Create two big murals: one of Colorado short grass prairie and one of Kenya savanna.
   - **a.** Include only physical features (landforms, topographical features)
   - **b.** After study of both ecosystems, add animal and plant life to murals.
   - **c.** After study, add peoples, houses, tools, etc. Add climate/weather features, if possible.
6. Using a variety of resources, identify and analyze past and present use of both grasslands areas. Develop a chart or graphic organizer to display information gathered. Compare and contrast housing, food, clothing, transportation, native and present-day peoples, etc. Put on class graphic organizer.
7. Investigate what food products come from grasses. Discuss how corn is also a "grass." List all grasses that supply us with food. Read *From Grain to Bread* and bake bread. Younger children can listen to *The Little Red Hen*. Wheat can be ground in a coffee grinder. Corn can be ground on a grinding rock. If bread baking is not feasible, eat a purchased food.
8. Investigate and analyze how weather and climate affect grasslands in these two areas. Good books to read include: *Bringing the Rain to Kapiti Plain, Dakota Dugout,* and *Little House on the Prairie*.
9. Discuss present use of both areas and theorize on the future. Discuss conservation/preservation practices. Brainstorm and chart possible actions the class could take to help with the latter. Read about Colorado's two restored National Grasslands, Comanche and Pawnee.
10. Use a music activity such as "Home on the Range" (see handouts) to analyze how words of the song fit the grasslands environment or use the song as a beginning activity to deduce the characteristics of this "place." Sing the new version. Have class make up more verses to reflect characteristics of place and region.

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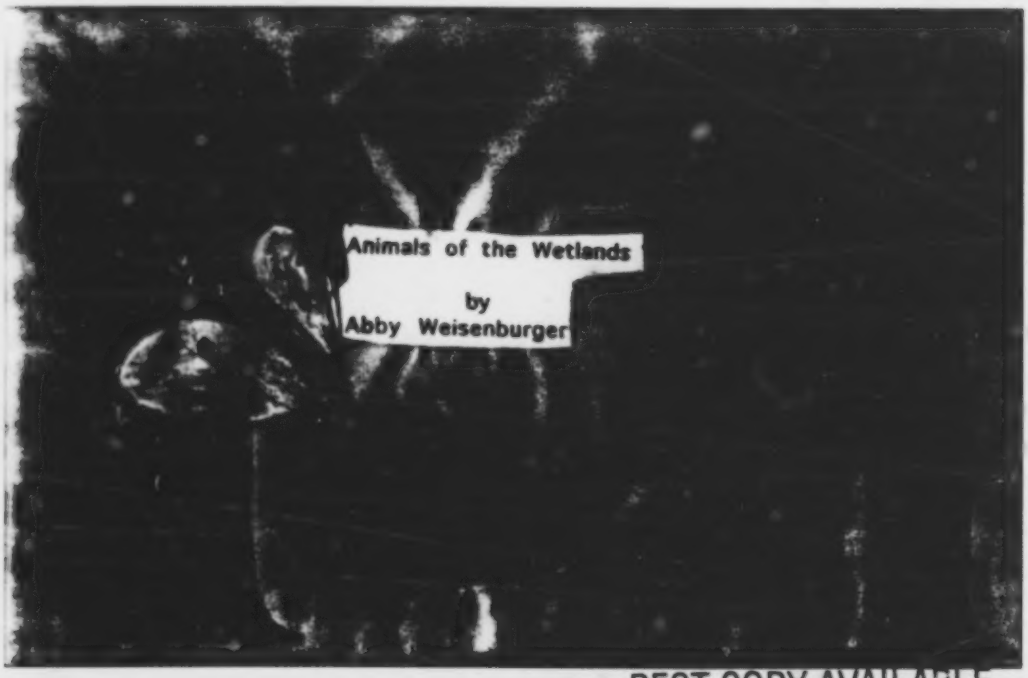
11. Do the treasure map activity that takes students through a grassland to practice map skills. (See handout.)
12. Integrate math skills, such as a computer program in which the class counts grassland animals.

Assessment

1. Direct students, individually or in teams, to choose: a) Colorado short grass prairie or b) Kenya savanna.
2. The task is to make the previously planted container into a recognizable ecosystem by adding plants, animals, people, homes, etc., in some art form (clay, paper, etc.). Each diorama is to be divided in half, to show both past and present.
3. Present diorama to class and justify contents orally using information gathered in this unit. Weather and climate are factors to be discussed. State why grasslands are a "region."
4. Tell if you think grasslands should be saved/maintained for the future and, if so, why.

Other topics can be integrated into the unit.



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Home Home

Sing to the tune of *Home on the Range*.

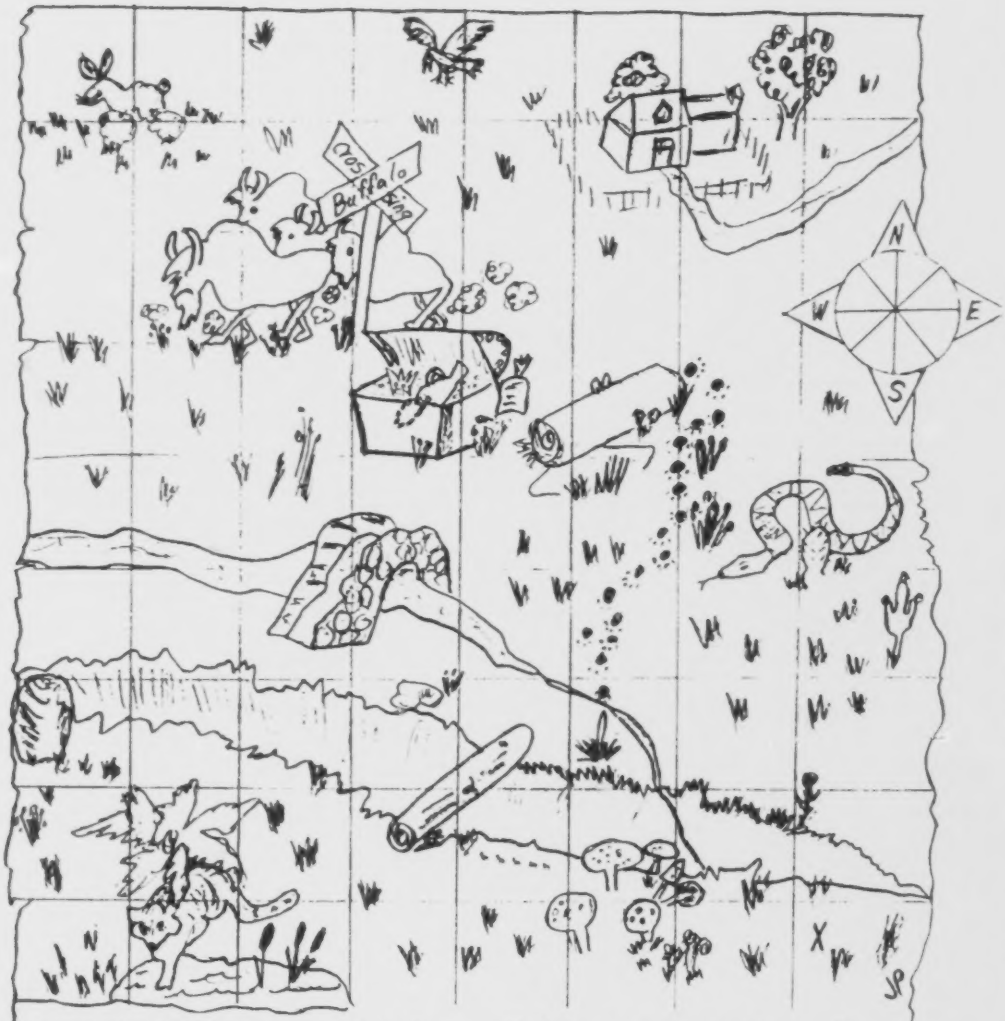
Home, home on the plains,
Where the deer and the antelope play.
Where the grasses do grow and the winds sure do blow
And the skies are not cloudy all day.

by Janet Pommrehn

ACTIVITY:

Sing this version and then make up one or two verses of your own that reflect characteristics of "place" and "region" which you have learned in this unit.

Grasslands Treasure Map



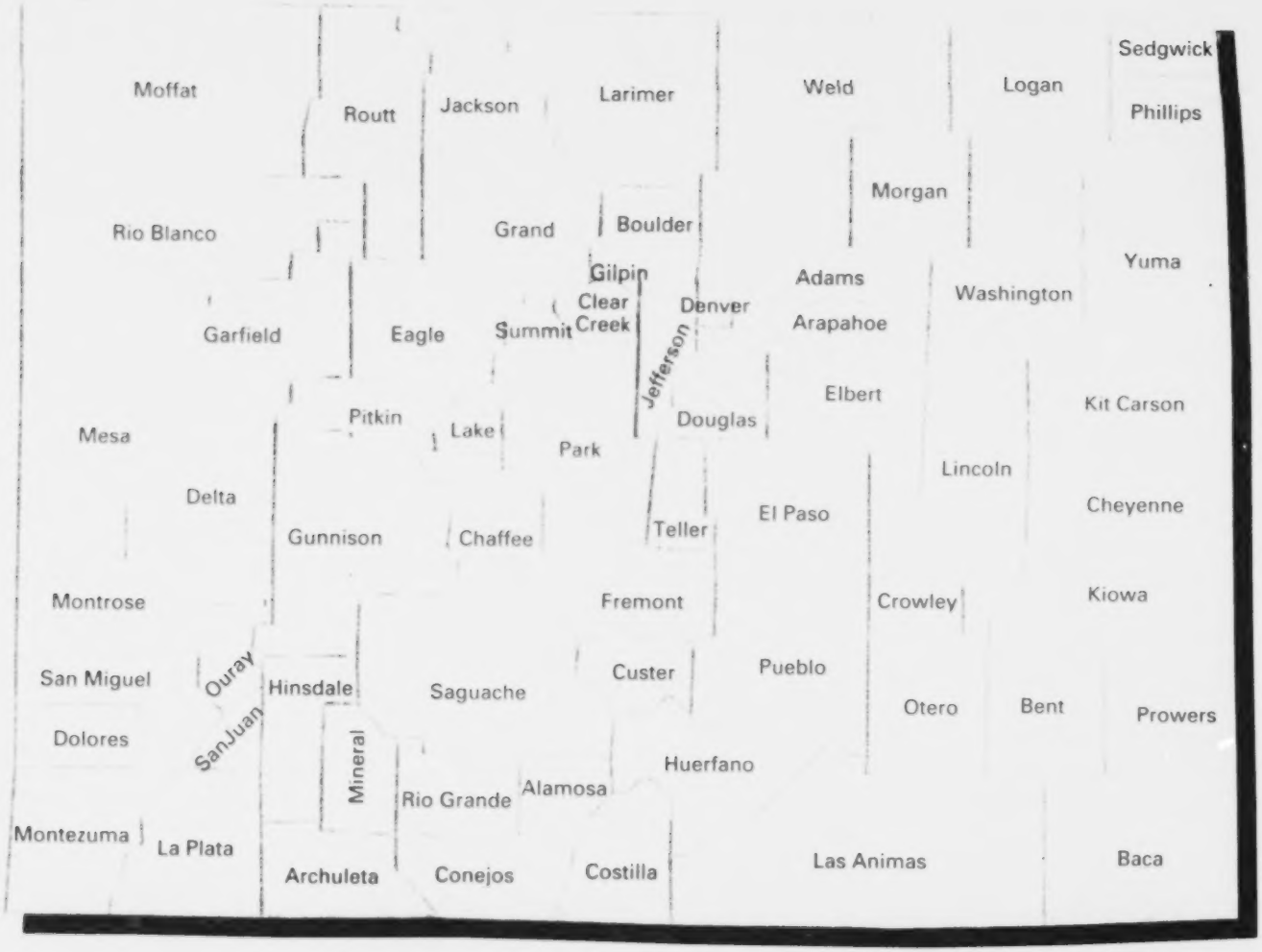
Start at the X. Walk 4 squares W. Go 1 square N. Cross the canyon on the log. Be careful!! After stepping off the log, cross the creek, and go 1 square N. Go 1 square E, 1 square N, 1 square E (be careful of the Western Diamondback). Go 2 squares N, 2 W, and 1 S. You are at the treasure IF you followed directions! GOOD LUCK!!

Kenya

ETHIOPIA
KENYA
SOMALIA
Eldoret
Kisumu
Nairobi
TANZANIA
Indian Ocean
Mombasa
Tanga

World Outline Map

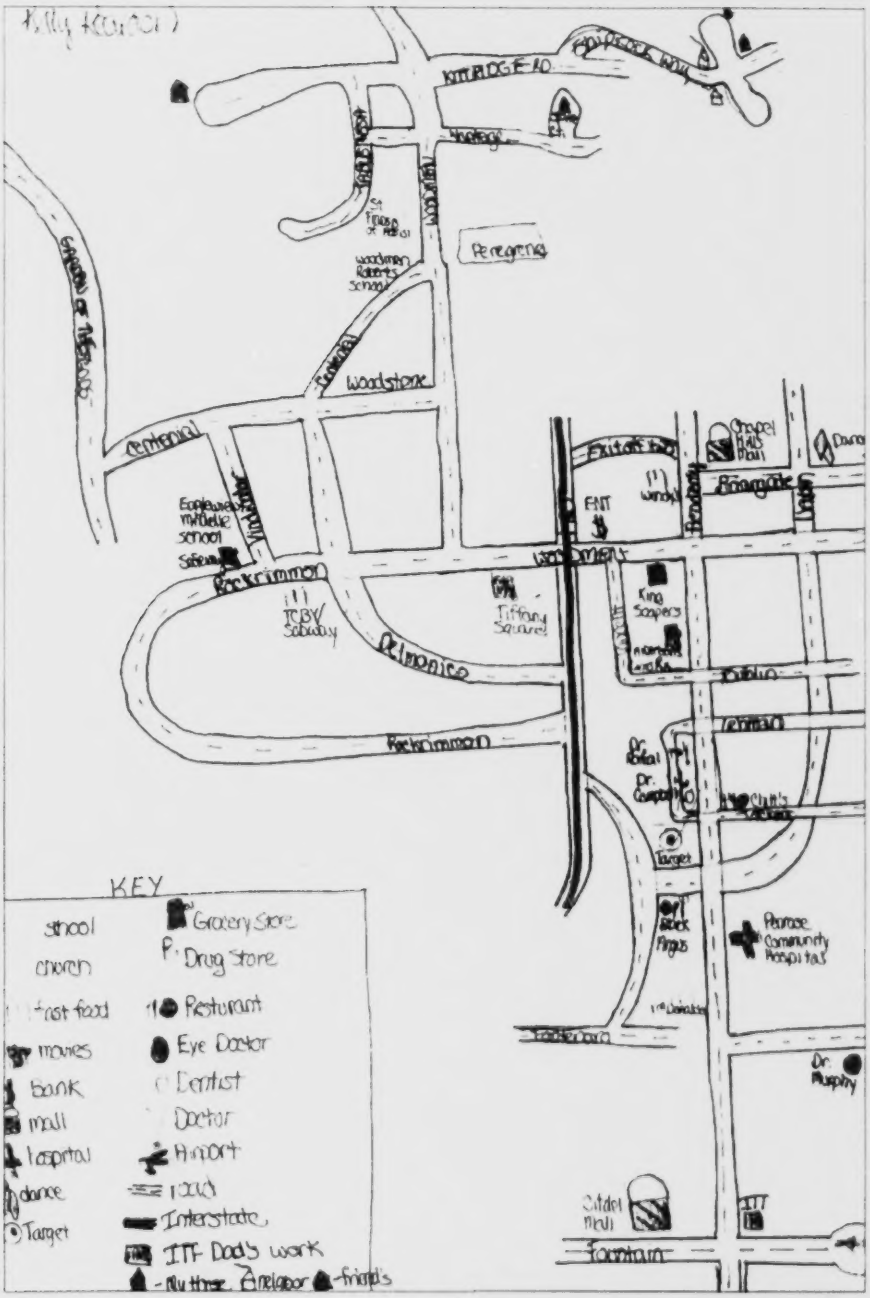
The United States


Moffat
Routt
Jackson
Larimer
Weld
Logan
Sedgwick
Phillips
Morgan
Rio Blanco
Grand
Boulder
Yuma
Gilpin
Adams
Clear Creek
Denver
Washington
Garfield
Eagle
Summit
Arapahoe
Jefferson
Elbert
Pitkin
Douglas
Kit Carson
Mesa
Lake
Park
Lincoln
Delta
El Paso
Cheyenne
Gunnison
Chaffee
Teller
Montrose
Fremont
Crowley
Kiowa
San Miguel
Ouray
Hinsdale
Saguache
Custer
Pueblo
Otero
Bent
Prowers
Dolores
SanJuan
Mineral
Huerfano
Rio Grande
Alamosa
Montezuma
La Plata
Archuleta
Conejos
Costilla
Las Animas
Baca

Colorado

Kids' Community Guide

Middle School Unit



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Overview

Mental maps are the means by which we organize our knowledge of places and regions of the world. In this inter-school unit, involving students from schools with significant demographic differences, students make freeform mental maps of the places they go to on a regular basis. Students become aware of a variety of activities available within all parts of their community. They have the opportunity to explore barriers that prevent them from enjoying any of these activities. From the generated lists, the students create a kids' guide to their community.

Grade/Course

Grades 7-8

State Standard(s)

1.2 Knowledge of Earth to locate people, places and environments.

2.1 The physical and human characteristics of places

2.3 That culture and experience influences people's perception of places and regions

Standards (also addressed)

#1: Seeing the World Geographically

Students know how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.

Essential concepts embedded in this standard:

1.1 know how to use maps, globes and other geographic tools to acquire, process and report information from a spatial perspective;

1.3 know how to analyze the dynamic spatial organization of people, places and environments on Earth's surface.

#2: Places and Regions

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

Essential concepts embedded in this standard:

2.2 students know how and why people define regions.

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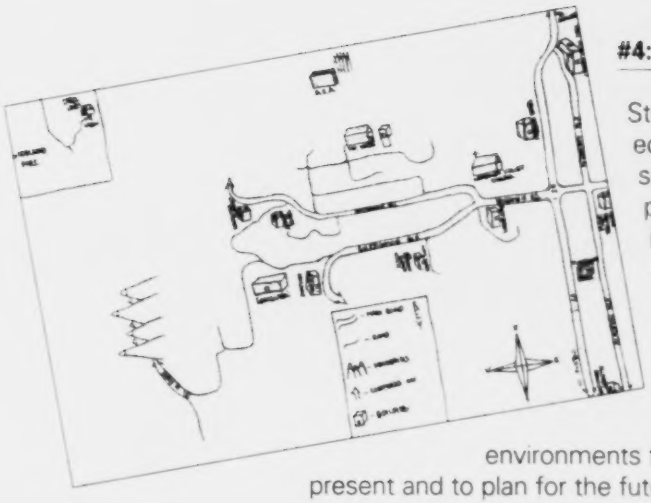

#4: Human Systems

Students understand how economic, political, cultural, and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict on Earth's surface.

#6: Applying Geography

Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

Essential concepts embedded in this standard:

6.2 Students know how to apply geography to understand the present and plan for the future.

Question

How does culture and experience influence people's perception of places within their community? How can cooperation and new experiences break down barriers?

Skills

This activity requires students to:

- ask geographic questions
- acquire geographic information
- present geographic information
- analyze geographic information
- develop and test geographic generalizations

Geographic Vocabulary/Concept

Mental map, perceptual region, choropleth map

Objectives

As result of this learning activity, students will:

- use maps and community resources to find information.
- make sets of geographic data from primary and secondary sources.
- make maps drawn from memory.
- use telecommunication to send and receive information.
- investigate and report on recommending or evaluating the location of an activity, facility, or business.
- discuss how individuals, groups, and cultures perceive issues and events differently.

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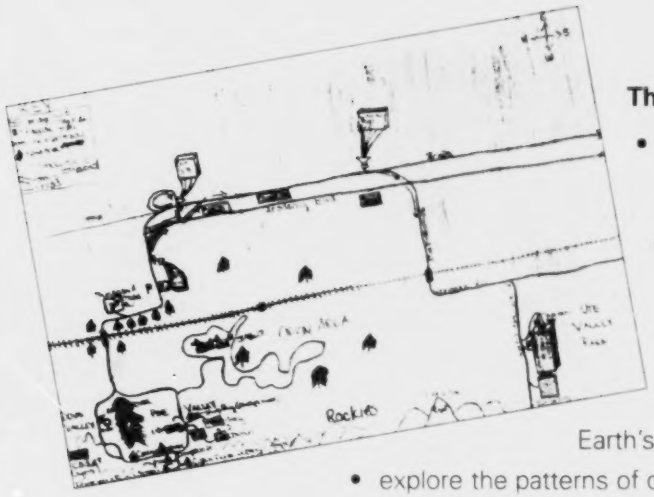


Benchmarks

The student will:

- experience ways in which culture influences behavior and perception
- evaluate the characteristics of places and regions from a variety of perspectives
- experience how people cooperate and also engage in conflict to divide the Earth's surface into different spaces
- explore the patterns of different standards of living

Integration

Language arts, mathematics

Resources

Local map, phone book, worksheet, colored pencils, butcher paper, ruler (for extension: community contacts — superintendent, public relations officer, visitors bureau, local news media)

Time (approximate)

On task — three weeks, some down time for exchanging information.

Learning Activities

Background:

In order for students to appreciate the implications of differing visions of realities, they must understand that people's perceptions and consequently their mental maps of places may vary. Some of the factors that may influence people's perceptions of places include age, education and experience.

Introducing the activity:

What is your world? (Making a Community or Turf Map)

- Start the classroom discussion with the following questions:
  - Did any of you bring maps to school with you today?
  - How did you get to school? To the bus stop?
  - If you were blindfolded or blind, could you find your way from your desk to the classroom door?

  Discuss the implications of accurate and inaccurate mental maps for decision making. Consider why different individuals may have different mental maps of the same place.

  Brainstorm as a class places you go on a regular basis.

Executing the activity:

1. Students choose a focal point and make a freeform mental map of the places they go on a regular basis.

   Provide time for students to discuss where they think this region is and what characteristics define it. Make the observation that this is a perceptual region. Ask students if they agree or disagree and why.

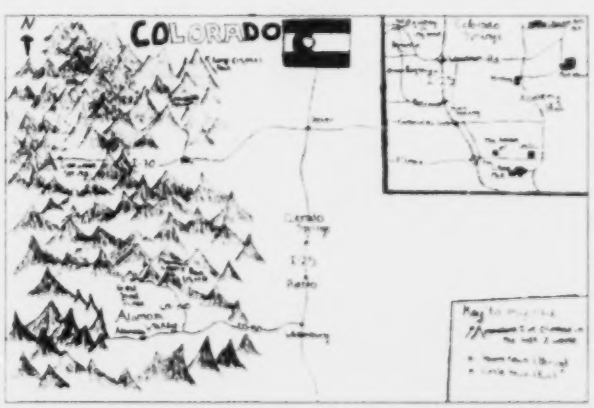
2. Share your map with a partner from the same school but from a different neighborhood.
   - Compare and contrast; record in your log (see assessment for more details)
   - Report out
   - Plot on a real map

3. List and justify where you would take a favorite friend or relative (peer age).
   - Students will prepare a personal list of places that are important and exciting to them within their community. This list, with reasons for each choice, should be placed in their log.
   - Using the phone book and a local map, plot and color-code each of the places on a map and record the address and phone number in the log.
   - With partner, compare and contrast; record in log.
   - Report out.
   - Plot places on the class map and frequency chart (use a specific color).
   - Discuss as a class patterns and boundaries. Record in log.

4. Map exchange between schools
   - On the attached worksheet, list the places with a colored key.
   - Staple the worksheet and the maps together and exchange between schools.
   - At the new school, study the map and the key. On the worksheet, indicate for each item whether you would take your friend there and tell why or why not.
   - Plot places on the class map and frequency chart (use a different color).

Concluding the activity:

- Discuss as a class patterns and boundaries. Compare and contrast. Record in log.
- The lists are returned to their respective owners, allowing the students to compare and contrast and to speculate upon the reasons for any differences. Record in log.
- Brainstorm reasons why people perceive things differently.
- The students communicate on line with the person who commented on their list about similarities and differences.



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Enrichment/Extension

Interested students may want to collaborate with community resources to publish an actual guide.

Assessment

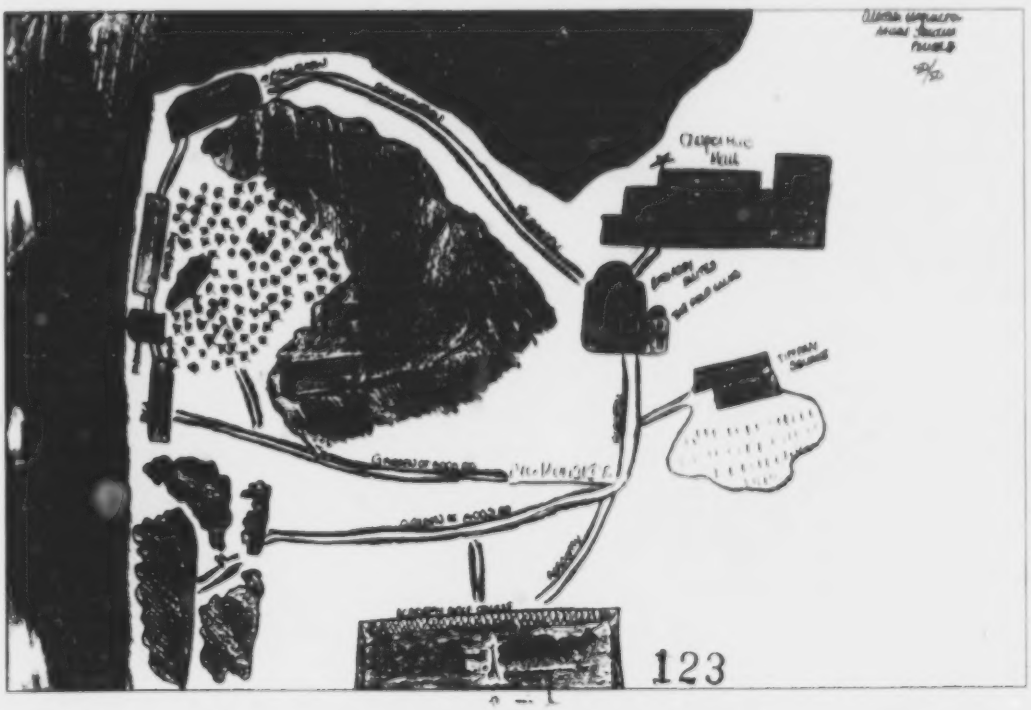
Individual:

Students create a working portfolio on the project that will include:

- The student's mental map.
- A log of interactions with partner.
- A log of comments the student has made on the map from the partner school.
- The student's worksheet and color-coded map.
- A hard copy of the conversation between students about differences and similarities in opinions and perspectives.
- **A thought paper —** What are some new places you would like to explore? Why? What do you think causes you and/or your peers to go to specific places? What do you think causes you and/or your peers to avoid specific places?

Group:

Students will create, administer and collate a survey on the best places to go in the community. Using that information, they will design and produce a Kids' Community Guide.



Kid's Guide Preference

SCHOOL OF ORIGIN	SCHOOL OF REVIEW
Name	Name
School	School
Teacher's Name	Teacher's Name

Best Places	Would you take someone there?	Why?
1.		
2.		
3.		
4.		
5.		
6.		
7.		

Are We Trading Away Our Rain Forests...?

High School Unit

Student portfolio.

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Overview

Brazil is one of many developing countries caught in the dilemma of choosing between protecting and preserving the vast, though finite, resources of the Amazon or developing and exploiting those same resources. Students will examine issues of global interdependence — specifically, the impact of economic decisions made in one country (the U.S.) on people and environments in another country (Brazil).

Begin the unit with background study and comparison of rain forests in general, and the Amazon in particular. Following initial atlas work, students will analyze trade data to determine products derived from the Amazon, analyze U.S./Brazil trading patterns, and produce charts and flow maps to reflect those trading patterns. Using a jigsaw strategy, students will consider economic decisions and perspectives of various U.S. consumers, laborers and business executives, then analyze the individual and collective impact of purchasing and consumption decisions made by millions of individual U.S. citizens on the Brazilian people and environment. The costs and benefits of various decisions will be analyzed, and alternatives will be generated.

Grade / Course

World Geography, Grade 10

State Standards(s)

#5: Environment and Society

Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution and importance of resources.

Benchmarks:

The student:

5.1 predicts the benefits and costs involved in changing the relationship between businesses and government in solving environmental problems.

5.3 analyzes the relative importance of resources in countries at different times.

#4: Human Systems

Students understand how economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.

Benchmarks:

The student:

4.1 analyzes the interaction of diverse groups of people to solve environmental problems.

4.3 analyzes how economic systems influence the patterns of interaction among regions.

4.3 analyzes how economic activities influence land use (i.e., hunters & gatherers, agrarian societies, industrial societies, etc.)

4.3 identifies and analyzes patterns of economic interaction and interdependence.

4.5 evaluates social, economic and political factors that may make environmental problems difficult to solve

STANDARDS (ALSO ADDRESSED)

#2. Places and Regions

Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.

#3. Natural Systems

Students understand how the physical processes shape Earth's surface patterns and systems.

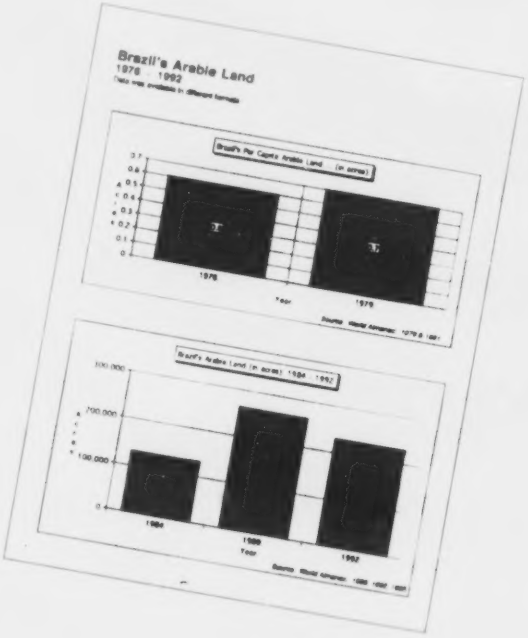
QUESTIONS

How do the economic decisions made by the people of one country have major positive or negative impact on the people and environment of its trading partners?

How do global patterns of economic development, distribution and trade contribute to environmental destruction?

LOCATION

Brazil — the Amazon Rain Forest



GEOGRAPHIC THEMES

- Human/Environment Interaction
- Region

INTEGRATION

Geography, Science, Political Science, Economics, English

RESOURCES

Print

- Goode's Atlas
- Atlas of the Environment
- Economic Atlas of the World
- Geography on File, Facts on File
- The Real World, Houghton Mifflin
- Various readings + newspaper and magazine clippings file

Maps

- Landsat maps as available of the Amazon, of northwestern United States, and of other rain forests. It is particularly desirable to have Landsat maps for two or more periods of time for any/all of the above areas.
- Thematic maps of the rain forest from two or more time periods.

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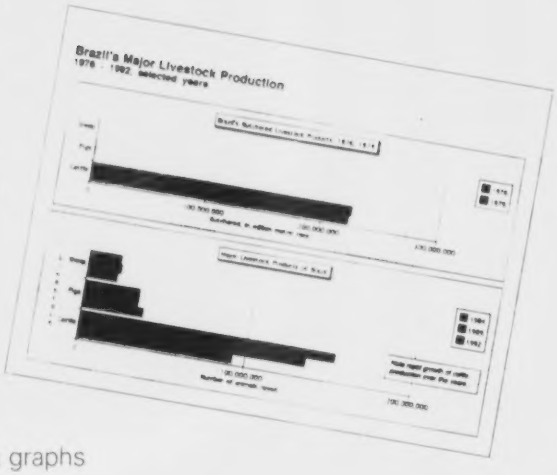
- Population maps and pyramids of each region
- Additional USGS maps



Videos

- *Spirits of the Rain Forest (Discovery Channel)*
- *The Amazon, parts 1 & 2 (Discovery Channel)*
- *Rain Forest (NGS)*
- *Amazon: Land of the Flooded Forest (NGS)*
- *Global Geography (segment #1)*

Computers

- GTV: Planetary Manager (NGS)
- Any spreadsheet program for making charts & graphs

Time

2 weeks (approximate)

Skills

The student will:

- observe the human and physical characteristics of places
- develop systematic combinations and classifications of both descriptive and statistical data
- prepare graphs, including title and source of data and labeling categories
- prepare maps using area and point data including title, scale, legend and orientation.
- prepare well-constructed interpretive oral and written reports to accompany maps, graphics and other geographical data
- translate tabular and graphic information to verbal form
- interpret maps, including point, line and area spatial patterns and compare spatial patterns to propose relationships

Activities

1. What is a rain forest? Using the *Goode's Atlas*, students will complete initial activities designed to help them profile the basic characteristics of tropical and/or temperate rain forests. Following completion of Handout #1 and discussion, students should be able to describe characteristics of a tropical rain forest and give examples. Description will take place in any of many forms: discussion, coherent written paragraph, sketch map with labels, sketch of rain forest layers with labels, drama or song, etc. The activity can be extended by including characteristics of temperate rain forests and examples thereof.

   The present lesson uses the Amazon as the focal point for study, but in fact you could use any temperate or tropical rain forest.

   In addition to an atlas survey, videos, readings and discussion will help students know and understand characteristics of any rain forest, identify products derived from rain

forests, determine which products lead to deforestation and which support self-sustaining uses of the rain forests. Information specific to the various regions within the Amazon may be included.

NOTE: It is expected that many students will come to this course having already had some background in rain forests and deforestation, and the impact of increasing rates of deforestation. If so, you may want to shorten this segment by omitting time spent on Handout #1; instead, have students review characteristics of rain forests through discussion. Perhaps have students make a three-column chart, with columns entitled: "What we know for sure"; "What we think we know"; "What we want to know."

2. Direct students to further investigate Brazilian agricultural and manufactured products to determine Brazil's chief exports. Export data from several points in time will help the students notice any change in trade patterns. Focus particularly on those products that derive from the rain forest. Information is available from print and electronic almanacs, encyclopedias, various World Bank and other publications, as well as other resources in your school and city library. Data may be collected by the teacher and distributed to the students (which saves time), or students might be assigned to obtain the data through individual research. Have students arrange the products into related categories. Groups might include:

   - houseplants
   - oils
   - woods, canes and fibers
   - gums and resins
   - fruits and vegetables
   - medicines
   - spices and flavors
   - animals, birds and other creatures
   - other food products (nuts, coffee, tea, grains, seeds, sugar, etc.)

3. Using the charting function of a spreadsheet program, direct students to produce graphs and/or charts of the trade data. Once produced, examine together the collection of charts and graphs, looking for patterns and trends. Elicit student questions about the data.

4. Divide students into groups and assign a category of products exported from Brazil to each group. Students will further investigate their assigned product categories to answer such questions as:

   - What percent of the total exports does this product category represent?
   - What countries import these products?
   - Do these products contribute to the deforestation/destruction of the rain forest? or are they self-sustaining products?

   Using previously developed cartography skills, direct students to produce thematic flow maps that show major products (by categories) exported from Brazil to its global trading partners. The path and direction of the lines will, of course, reflect export partner, and width of line will reflect percentage of trade of particular items. Each group will map products from its own category. Sharing of group data and products and the follow-up class discussion will help ensure that each student understands the larger trade picture.

5. Have students complete an inventory of their homes to look for products that derive from the rain forest. A sample is included as Handout #2, though it would be better to

also include a section on products derived from animals and other creatures — especially beef products and/or pets (birds, snakes, etc.) which may originate in the rain forest. After students complete the inventory, ask them to consider questions such as:

- Do my economic decisions, or those of my family, affect the rain forest?
- If so, is the impact positive or negative?

6. Distribute highway and transportation maps, Landsat photos of Brazil, the Amazon and South America for three or more time periods. At least some of the data needs to be pre-1970. Ask students to list patterns or trends they note from the data. (Data may include other changes/patterns, but should at least reflect deforestation, the building of the TransAmazon Highway, and possibly other infrastructure as well as commercial and industrial sites.) Ask students to speculate on possible causes for the noted changes. Generate possible hypotheses for why noted patterns are occurring.

   Because the present unit is designed to focus on economic interactions and resulting impact on people and environment, I will focus on a hypothesis similar to: "Economic decisions made by the people of one country can have major positive or negative impact on the people and environment of its trading partners."

7. At this point, have students look back at their trade data and maps and consider the effect on the rain forest of the development of the various products for trade. Ask them to consider questions such as:

   - Which products might tend to contribute to the deforestation?
   - Which products can be developed without contributing to deforestation?

   Discuss with students the concept of self-sustainment.

8. Because of the proliferation of rain forest units of study, students may have some understanding of the impact of increasing rates of deforestation. If they do not have this background, consider using the simulation, "Timber!" presented in "Madagascar's Dilemma," a unit developed by Laura Sanders Arndt and available in the Secondary GeoLinks. Follow with a debriefing discussion. (See Transparency #1 for directions and suggested debriefing questions.)

9. Begin this segment with a quick survey to determine how many students believe the destruction of the rain forest should be stopped.

   To help students understand the spending/consumption/economic decision-making patterns of various groups of people and the perspectives of each of those groups, divide students into expert groups that represent several roles within U.S. society. The roles represent U.S. consumers, laborers and/or business. Individual people in each of those roles make economic decisions that directly or indirectly affect the rain forest, either positively or negatively. And, when added together, the cumulative effect of the actions of people in each role as well as the cumulative effect of the actions of all the roles, directly or indirectly affect people and businesses in Brazil, which make economic and environmental decisions that ultimately impact the rain forest, either positively or negatively.

   Suggested roles of people in the U.S. include:

   - high school student who owns an exotic parrot
   - college student who wants, among other things, quick and cheap lunches
   - laborer in a factory that produces erasers and other products derived from Brazilian rubber

- pharmaceutical manufacturer with products on the market that derive from rain forest fauna
- environmentalist who is opposed to-any further development of the rain forest
- scientist who is concerned about the number of plant and animal species that are found only in the rain forest and are becoming extinct as the rain forest is disappearing
- staffer for Vice President Al Gore or a U.S. Congressman who sits on the House Commerce, Science and Transportation Committee
- roughneck for an oil company that went bankrupt and who hopes to find a job in South America
- heavy-equipment salesman who foresees profits from sales relating to Amazon development
- construction company foreman whose company built a section of the Trans-Amazon and who is anxious to keep going
- engineer with background in geology who is looking for geologic formations likely to be rich in oil and other mineral deposits in the Amazon region
- roofer who specializes in installing cedar shingle roofs
- owner of lumber mill or paper manufacturer who imports raw lumber from Amazon
- travel agent who has offered trips down the Amazon River for years

In "expert" groups of two or three, have students consider perspectives of their assigned role, and generate possible economic decisions made by those people that might ultimately have direct or indirect bearing on the rain forest. Working together, students should generate flow charts showing three possible actions taken by people in that role, and the costs and benefits of each action. (See Handout #3 as possible prep sheet.)

10. Regroup students into jigsaw groups of one "expert" from each role. In this group, students will serve on a panel seeking to develop a U.S. trade policy that will ultimately reduce negative impact on the Brazilian rain forest as a result of changes in American consumption and production patterns. As a group, students will predict the impact of their proposed policy and use their graphic skills to produce flow maps, graphs and charts to reflect the predicted results of implementing their suggestions. (See Handout #3 as prep sheet.)

Once determined, groups will present their proposals to the class and/or to a panel of local adults with related interests. Flow maps, charts and graphs that reflect predicted impact of the proposals will accompany and support the presentations.

As a class, analyze the proposals for similarities and differences, and evaluate them for potential failure and/or success. If possible, invite professionals to class to hear the proposals, to question the students on their ideas and to provide some feedback. (Possible guests include a science teacher, local representative of the Sierra Club, local business person, representative of local government, etc.)

After analyzing the various policies, get the class to reach consensus on components of the best proposal.

Extension

1. Once the work on the Amazon is completed, students might be encouraged to investigate related issues and challenges in other tropical rain forests (such as those

in Africa, Southeast Asia, Indonesia, Australia, etc.), and/or to look at the similar depletion of natural resources in temperate rain forests such as those in the northwestern United States. The recent efforts of the Clinton administration to strike a balance between the timber industry and environmentalists in Oregon and Washington and the deforestation of Ghana related to the export of teak wood are examples.

2. A variation of Extension 1 above would be an ongoing assignment of "Geographic Connections" in which students watch for current issues and events that relate to units of study. These Geographic Connections might be logged into notebooks or journals, or they might be summarized and attached to a large wall map. For example, students might find and summarize an article about the depletion of teak (and rain forests) in Ghana or they might find articles on NAFTA that focus on the impact of trade between two or three of the NAFTA trade partners, and any positive or negative effects.

Assessment

Individual:

Each student will prepare a flow chart that shows (possible) economic decisions made by a category of consumers and/or producers in the U.S., then analyzes those decisions for costs and benefits, impacts on the rain forest and possible alternatives.

Group:

Each student will take part in a panel simulation to develop a U.S. trade policy that will ultimately reduce negative impact on the Brazilian rain forest as a result of changes in American consumption and production patterns. As a group, students will predict the impact of their proposed policy and use their graphic skills to produce flow maps, graphs and charts to reflect the predicted results of implementing their suggestions.

Group:

Working in their cooperative groups, students will present their proposals to the class and/or to a panel of local adults with related interests.

Handouts

See attachments for:

HO #1: Atlas Profile of the Amazon (background assignment)
HO #2: Inventory of Rain Forest Products
HO #3: Analyzing Economic Choices (preparation sheet)
HO #4: Cumulative Impact of Economic Decisions (preparation sheet)
TR #1: Timber! a simulation of deforestation
TR #2: Quotes
TR #3: More Quotes

To be collected and/or developed:

- Many specific items of data and/or sources for specific maps and statistics, and from 2-3 time periods
- Rubric indicating criteria for credit

Atlas Profile of the Amazon

DIRECTIONS:

Using a current *Goode's Atlas*, profile the characteristics of the Amazon rain forest. Use *Goode's World Atlas* to find the following information on Brazil's resources, climate and economics. Be sure to describe any differences that occur by drawing a diagram or providing a written explanation.

1. Absolute location (range of latitude and longitude)
2. Relative location (Description)
3. Annual precipitation
4. Landforms
5. Vegetation
6. People
7. Population density
8. Birth rate
9. Death rate
10. Urbanization
11. Gross domestic product (per capita GDP)
12. Literacy rate
13. Life expectancy
14. Religion
15. Languages
16. Predominant economies
17. Products farmed
18. Products manufactured
19. Minerals
20. Energy

- Which of the above data categories would you expect to correlate in all tropical rain forests? List the categories below and explain your prediction.

- Look at the thematic map on "Climatic Zone" to check your prediction. How accurate were you?

- Write a paragraph that provides details to complete the following:
  In general, tropical rain forests are characterized by...

Rain Forest Pantry

Woods, Canes and Fibers

Woods

(furniture, floors, doors, paneling, cabinets, carvings, toys, models)

- balsa
- mahogany
- rosewood
- sandalwood
- teak*

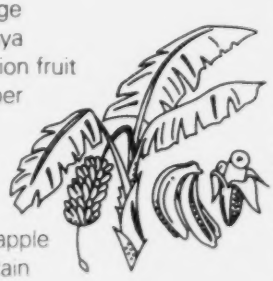
Canes and Fibers

- bamboo (cane furniture, crafts)
- jute* (rope, twine, burlap)
- kapok (insulation, stuffing)
- ramie* (knit materials)
- rattan (furniture, wicker, cane chair seats)

Food Products

Fruits and Vegetables

- avocado
- banana
- grapefruit
- guava
- heart of palm
- lemon
- lime
- mango
- orange
- papaya
- passion fruit
- pepper



- pineapple
- plantain
- potato*
- sweet potato
- tangerine
- tomato
- yam*

Spices and Flowers

- allspice
- black pepper
- cardamom
- cayenne (red pepper)
- chili pepper
- chocolate or cocoa
- cinnamon
- cloves
- ginger
- mace
- nutmeg
- paprika
- turmeric
- vanilla

Other Food Products

- Brazil nuts
- cashew nuts
- coconut
- coffee
- corn*
- macadamia nuts
- peanuts*
- rice
- sesame seeds*
- sugar*
- tapioca
- tea

Household Products

Houseplants

- African violet
- aluminum plant
- Anthurium Philodendron
- Begonia
- bird's-nest fern
- bromeliads
- Christmas cactus
- Croton
- dumb cane (Dieffenbachia)
- fiddle-leaf fig

Oils

- bay (bay rum lotion)
- camphor (insect repellent, medicine)
- coconut (snack food, baked goods, lotions, soap)
- lime (food flavoring, candles, soap, bath oil)
- palm (snack food, baked goods)
- patchouli (perfume, soap)
- rosewood (perfume)

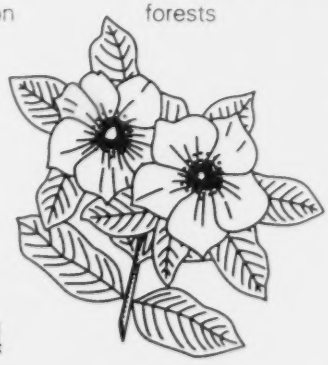
Gums and Resins

- chicle (chewing gum)
- copal (varnish, printing ink)
- dammar (varnish, lacquer)
- rubber (balloons, erasers, foam rubber, balls, rubber bands, rubber cement, gloves, hoses, shoes, tires)
- rosewood (perfume)

Medicines

- curare
- ipecac
- quinine
- reserpine
- vincristine

* products that may have originated in other types of tropical habitats near rain forests



Reprinted with permission from the 1993 Wildlife Week Educator's Guide
"Rain Forests: Help Save their Layers of Life"

Tropical Key

NOTE:

At present, many of these plants and animals are raised as crops. They have their origins in the tropical forest. If the tropical forest had been destroyed before their properties were discovered, humans would have been denied the benefit of their use, or in some cases, their misuse.

annatto .....a dye made from the pulp around the seeds of the annatto tree

aspirin .....a tropical plant extract, relative of the willow

banana.....over 800 different types in cultivation

carnuba .....an oil-rich palm

cashew .....tropical tree; nut grows on top of the fruit, the tree bark is medicinal

chicken.....domesticated from a rainforest bird

chocolate.....made from the seed of the cocoa tree

Coca Cola .....*coca* is the plant cocaine comes from — the first Coca Cola had this ingredient, but not today; *cola* is a caffeine-rich plant that is used for flavoring

coconuts .....nut-bearing palm; likes salt, grows near coast

coffee .....an understory berry bush

corn .....came from Latin America

gum .....made from the sap of the chicle tree

hamburger .....rainforests are being cleared in Costa Rica and Brazil to raise cheap beef for American fast-food restaurants

kapok.....a large hardwood tree

lacquer.....wood seal made from tropical resins

mahogany.....an emergent layer hardwood tree

orange .....originated in the tropics

palm oil .....product of an oil palm

philodendron .....a vine that grows from the forest floor to the understory and sometimes in the canopy, used as a common house ornament in the U.S.

pineapple.....a bromeliad

rosewood .....a large emergent layer tropical tree

rubber .....a member of the fig family, an understory tree

sugar .....large grass growing in sunny places like riverbanks

sweet potatoes ....underground tropical tuber

tapioca.....made from manioc

tomato.....tropical relative of deadly nightshade

from: What Have You Got to Lose? The New World Tropical Rainforests,
SPICE: Stanford University, page 76

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Tropical Forests

Our Tropical Connection

Everyday products from tropical forests

Think of many of the things we take for granted: hot coffee, a banana for lunch, an apple pie fragrant with cinnamon and nutmeg, a chocolate candy bar, a rubber ball, latex paint to touch up the walls, or anesthesia to ease the pain of surgery. Ingredients in all of these come originally from tropical forests. Indeed, the array of everyday products for which tropical forests are still an important source is astonishing. Here are some items these forests supply.

Woods	Houseplants	Spices	Fruits	Vegetables/ other foods
Teak	Anthurium	Allspice	Avocado	Brazil nuts
Mahogany	Croton	Black pepper	Banana	Cane sugar
Rosewood	Dieffenbachia	Cardamom	Coconut	Cashew nuts
Balsa	Dracaena	Cayenne	Grapefruit	Chocolate
Sandalwood	Fiddle-leaf fig	Chili	Lemon	Coffee
	Mother-in-law's tongue	Cinnamon	Lime	Cucumber
Used for:	Parlor ivy	Cloves	Mango	Hearts of palm
Toys	Philodendron	Ginger	Orange	Macadamia nuts
Doors	Rubber tree plant	Mace	Papaya	Manioc/tapioca
Flooring	Schefflera	Nutmeg	Passion fruit	Okra
Veneer	Silver vase bromeliad	Paprika	Pineapple	Peanuts
Cabinetry	Spathiphyllum	Sesame seeds	Plantain	Soft drinks (cola)
Dresser drawers	Swiss cheese plant	Turmeric	Tangerine	Tea
Garden furniture	Zebra plant	Vanilla		
Packing cases				
Insulation				
Railroad ties				
Boat building				
Chemical vats				
Drawing boards				

Fibers and their uses	Gums, resins, and their uses	Pharmaceuticals and their uses	Oils and their uses
Bamboo (furniture, baskets)	Chicle latex (chewing gum)	Annatto (red dye)	Camphor oil (perfume, soap, disinfectant, detergent)
Jute/kenaf (rope, burlap)	Copaiba (perfume, fuel)	Curare (muscle relaxant for surgery	Cascarilla oil (confections, beverages
Kapok (insulation, sound-proofing, life jackets)	Copal (paints and varnishes)	Diosgenin (sex hormones, birth control pills, steroids, asthma and arthritis treatment)	Coconut oil (suntan lotion, candles)
Raffia (rope, cord, baskets)	Gutta percha (golf ball covers)	Quassia (insecticide)	Eucalyptus oil (perfume, cough drops)
Ramie (fabric, fishing line)	Rubber latex (rubber products)	Reserpine (sedative, tranquilizer)	Palm oil (shampoo, detergents
Rattan (furniture, wicker, baskets)	Tung oil (wood finishing)	Strophanthus (heart disease)	Patchouli oil (perfume)
		Strychnine (emetic, stimulant)	Rosewood oil (perfume, cosmetics, flavoring)
		Yiang-yiang (perfume)	Tolu balsam oil (confections, soaps, cosmetics, cough drops

Analyzing Economic Choices

Preparation Sheet

DIRECTIONS:

As a group, consider the possible economic actions taken by each group. Consider the costs and benefits of each economic decision and/or action, then analyze the impact on the rain forest, and possible alternatives. While you will work together as a group, make individual flow charts.

ROLE

ACTION 1	ACTION 2	ACTION 3
Costs	Costs	Costs
Benefits	Benefits	Benefits
Possible impact on rain forest	Possible impact on rain forest	Possible impact on rain forest
Alternatives	Alternatives	Alternatives

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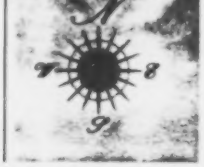


Cumulative Impact of Economic Decisions

Preparation Sheet

Tropical and temperate rain forests all around the world are disappearing at astonishing rates — not because of any one reason, but rather because of the cumulative effect of millions of decisions made by individuals throughout the world, and particularly throughout the industrialized world. Focusing on the Amazon as a source of products, analyze the decisions made by various individuals. Then explain how their actions, both individually and collectively, affect the Amazon as a whole.

DIRECTIONS:

As a group representing a variety of roles and perspectives, analyze the cumulative impact on the rain forest of economic choices (production and/or consumption) made by individual citizens.

Individual or Role	Choices/ Actions	Effect on Rain Forest
High school student		
College student		
Laborer in eraser, etc., factory		
Pharmaceutical manufacturer		
Environmentalist		
Scientist		
Political staffer for V.Pres Gore or...		
Roughneck on oil rig		
Heavy-equipment operator		
Construction company foreman		
Petro engineer/geologist		
Roofer who specializes in installing cedar shingle roofs		
Owner of lumber or paper mill		
Travel agent		

Timber!

as presented by Laura Sanders Arndt in "Madagascar's Dilemma"

Goal:

To observe what happens when a renewable resource is used faster than it is replaced due to population growth.

Roles:

Lumberjack Forest Timer Forest Manager

Procedure:

a. Forest has 120 trees (sticks that are available for logging).

b. Forest Manager has 32 trees to be planted in the forest.

c. Lumberjack will record the changes in the number of trees each minute on a data sheet with columns for the following:

- Minutes
- Number of Trees at Beginning of Minute
- Number of New Trees
- Number of Trees Cut
- Number of Trees at End of Minute

d. Timer begins the game. Every 15 seconds the Timer tells the Forest Manager to "plant" a tree (give one to the forest).

e. After one minute, the Lumberjack removes one tree from the forest.

f. World wood demand doubles for each succeeding minute, meaning that after 2 minutes, _____ trees are logged; after 3 minutes, _____ are logged, etc.

g. Game ends when wood reserves are depleted.

Debrief by discussing the following questions:

1. How long did it take for the Lumberjack to cut down all the trees in the forest?
2. Why was the forest always shrinking?
3. If the Forest Manager could develop a tree that grows at one tree per second, would tree growth keep up with timber demands?
4. Why or why not?
5. What could be done to prevent the depletion of the forest?
6. Relate this scenario to what is potentially happening in Madagascar.

Timber! Originally appeared in ***Two Cans and Toucans: Exploring Shrinking Habitat***, developed by Biological Sciences Curriculum Study.

Quotes

The following quotes might be written on posterboard and placed on the walls of the classroom. They might prove interesting as additional stimulus or possibly extension for some of the discussion.

"If the biodata ... has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering.
— Aldo Leopold

"Psychology as much as science will thus determine the planet's fate, because action depends on overcoming denial, among the most paralyzing of human responses.... This kind of denial can be as dangerous to society and the natural environment as an alcoholic's denial is to his or her own health and family.
— Worldwatch Institute, State of the World, 1992

"Deforestation condemns at least one species of bird, mammal, or plant to extinction daily.
— Worldwatch Institute, State of the World, 1992

"One must not always think so much about what one should do, but rather what one should be. Our works do not ennoble us; but we must ennoble our works.
— Meister Eckhart

"By pursuing lifestyles and economic goals that ravage the environment, we sacrifice long-term health and well-being for immediate gratification — a trade-off that cannot yield a happy ending.
— Worldwatch Institute, State of the World, 1992

Quotes

Extraordinary change is possible when enough courageous people grasp the need for it and become willing to act.... Who will be the Gorbachevs of the Environmental Revolution?
— Worldwatch Institute, State of the World, 1992

There is really no such creature as a single individual; he has no more life of his own than a castoff cell marooned from the surface of your skin.
— Lewis Thomas

Thus far, global environmental politics has been characterized more by foot-dragging and denial of problems than by cooperation.
— Worldwatch Institute, State of the World, 1992

Three-fourths of the world's bird species are declining in population or threatened with extinction.
— Worldwatch Institute, State of the World, 1992

No one knows, even to the nearest order of magnitude, how many life forms humanity shares the planet with: roughly 1.4 million species have been identified, but scientists now believe the total number is between 10 million and 80 million.
— Worldwatch Institute, State of the World, 1992

Collected from "A Guide to Curriculum Planning in Global Studies," Wisconsin Department of Public Instruction.

Curriculum

Planning a Standards-based Unit: a Professor's Perspective

By Dr. David Cole

The role of a geography professor in working with teacher-designed, standards-based units is that of a content consultant. A content consultant can be defined as a person who works with the teacher to make sure that the unit concept is truly geographical. Once the geographical content is determined, the content consultant can then help the teacher explore ways to strengthen the geography component.

Teaching units generally revolve around a central topic or theme. The content standards in geography and the essential geography concepts that are embedded in them provide a wealth of topics and themes from which a teacher can choose. But the standards themselves may not be the source of the teacher's topic idea. In my experience, teachers choose from topics in which they already have an interest. The role of the geographer is then to help guide the teacher from the topic of general interest to the specific geographical concepts and ideas that can be taught with that topic.

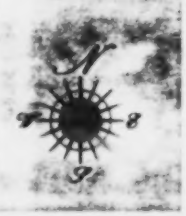
One important way of determining the geography content is through inquiry questions. If the question posed for inquiry isn't particularly geographical, or doesn't require geographical information to answer, the geographer can work with the teacher to reformulate the question and help identify sub-questions that help focus on the geographical aspects of the issue, problem or topic.

In developing the rain forest unit, "Are We Trading Away Our Rain Forests...?" the concepts of linkage and interdependency were highlighted to bring a different perspective to the issue of deforestation and economic development. The unit "Grasslands: A Natural Resource" was strengthened by a more in-depth look at the subtle differences in grasslands on various continents, and by adding the soils component to the unit. In so doing, the geography content was enhanced and relationships between physical systems were highlighted.

A unit such as "Kids' Community Guide" helps students learn more about their own town or city, and through mapping allows them to gain a better spatial perspective. By adding the concept of mental mapping, the students' geographical perception of a place can be compared with perceptions of others in the city, and students can gain a better understanding of the wide array of decisions that people make based on different perceptions of the same place.

The above examples show how a geography professor can contribute to the unit development process, and how the standards can be a guide in enhancing the geography content of the units. In addition to such a mentoring process, the geography professor can also give content presentations in geography that stimulate teachers to think of new topics or issues for teaching units and expand or deepen their own knowledge of a topic that would allow their units to be more substantive.

According to my observations, teachers may take one of two approaches to developing standards-based units. They may take a unit that they already teach and modify it so that it addresses one or more of the standards, or they can start with a fresh idea and develop it for an entirely new unit. The first approach seems more problematic. Goals and



objectives of an existing unit may be perceived as too altered when the geography component is enlarged to make it standards-based. This can cause reluctance on the part of the teacher to make the changes necessary to bring the unit into alignment with the standards.

On the other hand, building an entirely new unit frees the teacher from the constraints of the already determined objectives of a unit, and allows flexibility in fitting standards-based goals and objectives to the new unit. There is no fear that the "original" purpose of the unit is altered in the process.

In conclusion, an important part of standards-based unit development in geography should be the stimulation of growth in the teacher's knowledge of geography. Teachers can combine the creativity of teaching that they bring to the process with an expansion of their own knowledge and understanding of geography to construct exemplary teaching units.

Dr. David Cole is chair of the department of geography at the University of Northern Colorado and co-coordinator of the Colorado Geographic Alliance.

How to Develop a Unit of Instruction Based on the Geography Standards

By R. Keith Lucero

Standards identify what students will know and be able to do, but they do not chart a precise course for attaining those outcomes. Developing curriculum and implementing standards in the classroom is still the responsibility of school districts and classroom teachers. This chapter will show how developing units of instruction based on standards can assist Colorado teachers in providing student learners the opportunity to master each of the world-class geography standards.

Choosing what to teach and how to get important concepts across to students has always been a challenging problem. With the passage of House Bill 93-1313 this task seems more vexing. How does a teacher sift through the seemingly overwhelming amount of material in the Colorado geography standards and provide meaningful, thoughtful activities in a manner that challenges and enriches a student's learning?

Units of instruction provide the means for organizing content into a coherent package that enables a teacher to prioritize objectives, to communicate those objectives to students and to plan learning experiences that support those objectives. In writing units, teachers can focus on the specific needs and learning styles of their students. Teachers are more likely to make the standards a part of their curriculum when they use units they have developed themselves. Thus in the chain of standards-based education, the teacher is the most crucial link.

The Colorado Geography Framework Project worked with teachers to develop units based on standards and to make those units usable to teachers in Colorado. In developing these units, the following were identified as the major components of a unit of instruction: a topic question; an overview of the unit; the primary state standards that are learned and assessed in the unit; the secondary state standards presented in the unit but not directly assessed; benchmarks to measure the success of the students at specific grade levels; a time frame; and a description of needed resources, skills and assessments and proposed learning activities.

Topic Question

The topic question is one of the most important and challenging parts of writing a unit. It allows the teacher to focus all activities and assessment on a student's ability to answer the question. It targets the student's attention on the "what" and "why" of the unit.

Think about what you already teach your students in geography (or within geographical components of topic work). Determine the characteristics of your approach. Is your class organized regionally or thematically? What general characteristics of geographical education are emphasized? Can you accommodate existing emphases within the requirements of the standards? What changes are you going to have to make? The answers to these questions should guide your development of unit topics. The overriding consideration is to make sure that the unit incorporates elements of the standards.

Overview

The overview serves as the introduction to the unit, giving the teacher a chance to explain the purpose of the unit to students

and its relevance to their lives. As an example, consider the overview included in the "Grasslands" unit in the preceding section: "Grasslands are the world's best places to grow food. Getting food becomes a problem as our population increases and land is plowed under to make room for people. This unit teaches about two grasslands (Colorado and Kenya) and ends with the class analyzing the future of one of earth's most precious natural resources."

Primary State Standards

Imagine the mayor of a city who has no clear idea of the ideals and goals that guide his actions. It is unfortunately easy to do. In the same way, it is easy to imagine a teacher with no clear idea of what guides lesson and unit development. Standards provide such a guide. In the "Rain Forest" unit in the preceding section, for instance, the primary standard on which the unit is based calls for students to "understand the effects of interactions between human and natural systems and the changes in meaning, use, distribution and importance of resources."

Secondary State Standards

Primary standards are listed to identify the purpose and the assessment of the unit; secondary standards offer students additional opportunities to review, or be introduced to, standards, and further insight into the workings of other geographic content. Secondary standards are not assessed. In order for a student to understand how natural processes shape Earth's surface patterns and systems in a unit about the prairie, a second-grade teacher would have students read *Dakota Dugout* and *Little House on the Prairie*. The primary function of these readings is to broaden students' understanding of the physical and human characteristics of places.

Benchmarks

A benchmark is defined as "a description of developmentally appropriate activities or goals for use in planning instruction, learning activities or assessments." Standards will be assessed statewide in the 4th, 8th and 11th grades but students need to have an ongoing geography education. Making sure students can meet standards is the responsibility of every teacher, not only of those in the grades that are tested.

Benchmarks are a list of accomplishments, or models of success, for students at each grade level. They are neither too hard for a particular grade level nor too easy; they reflect the necessary challenging curriculum. If benchmarks are missing from units, then the likelihood of inappropriate activities and concepts increases dramatically.

Resources and Time Frame

Resources and a time frame encourage teacher preparation. No one can successfully prepare for and teach a lesson, much less a unit, without a complete list of the resources needed to help students understand the content. How long will it take to complete the unit? Will I have enough time, given the constraints of the day and of the school year, to complete the lessons and the ideas included in the unit? These questions need to be answered in the unit description.

Skills

Students and parents need to know which skills will be learned and practiced during the unit. The geographic skills that every student will know in the standards consist of five sets of skills adapted from the "Guidelines for Geographic Education: Elementary and Secondary Schools," prepared by the Joint Committee on Geographic Education and published by the Association of American Geographers

and the National Council for Geographic Education. They are:

1. Asking geographic questions.
2. Acquiring geographic information.
3. Presenting geographic information.
4. Analyzing geographic information.
5. Developing and testing geographic generalizations.

Assessment

If our goal is to produce students with the ability to understand and demonstrate geographic concepts, then clearly the assessment of their ability is the most critical piece. Assessments must be challenging and make students demonstrate mastery of content and skills. Geography, by its very nature is spatial, so assessments should incorporate that graphic sense. Using data to read, produce and analyze maps, graphs and charts will provide learners the ability to demonstrate their spatial ability.

Learning Activities

Learning activities introduce students to ideas and concepts, and give them the experience to establish their mastery of the standard. These activities also give students an opportunity to question and make mistakes. Learning opportunities should reflect a variety of teaching styles. Using only lectures denies students who learn in different ways the opportunity to establish mastery. After all, the standards are to be mastered by every student. Lessons must provide students an opportunity to see connections between content, skills and perspectives. Students should be encouraged to apply concepts and skills learned in geography to other situations and use the knowledge from other disciplines to understand geographic content.

R. Keith Lucero is a geography teacher at East High School in the Denver Public Schools.

Process/Format/Alignment Checklist

- ☐ **Keep the "essential tools" handy.**
  - — Five Themes
  - — Standards
  - — Benchmarks
  - — Geography skills
  - — Unit format
  - — Computer disk
- ☐ **Identify topics and associated questions.**
  - — Are the questions geographic?
  - — Do they focus on the standards?
- ☐ **Identify the standards and the support standards that your unit addresses.**
- ☐ **Find data and resources relevant to your unit.**
- ☐ **Develop ideas for activities and an assessment task.**
  Do they:
  - — Align with the standards and with each other?
  - — Involve students in using geography skills?
  - — Engage students in active learning?
- ☐ **Do the activities lead students to successful completion of the assessment task?**
- ☐ **Find and list the benchmarks relevant to your unit.**
  - — The benchmarks are bullets under the performance standards or Colorado benchmarks
- ☐ **Follow the "criteria" sheet and "unit format."**
- ☐ **Discuss your progress with a staff member.**

Worksheet designed by Katy Lapp, Social Studies Coordinator, El Paso #11 School District in

Building Standards-Based Lessons/Units

CONTENT STANDARDS
(What should students know and be able to do at the end of the lesson or unit?)

ASSESSMENT /TASK
(What evidence will you need to determine that students have achieved the outcome(s)?)

What is the Inquiry Question?

DELIVERY STANDARDS
(How will instruction be delivered?)

SKILLS/PERSPECTIVES

Graphic Organizer adapted from Aurora Public Schools, developed by Marianne Kenney.

What is the Unit Goal?

What standards lend themselves to this unit?

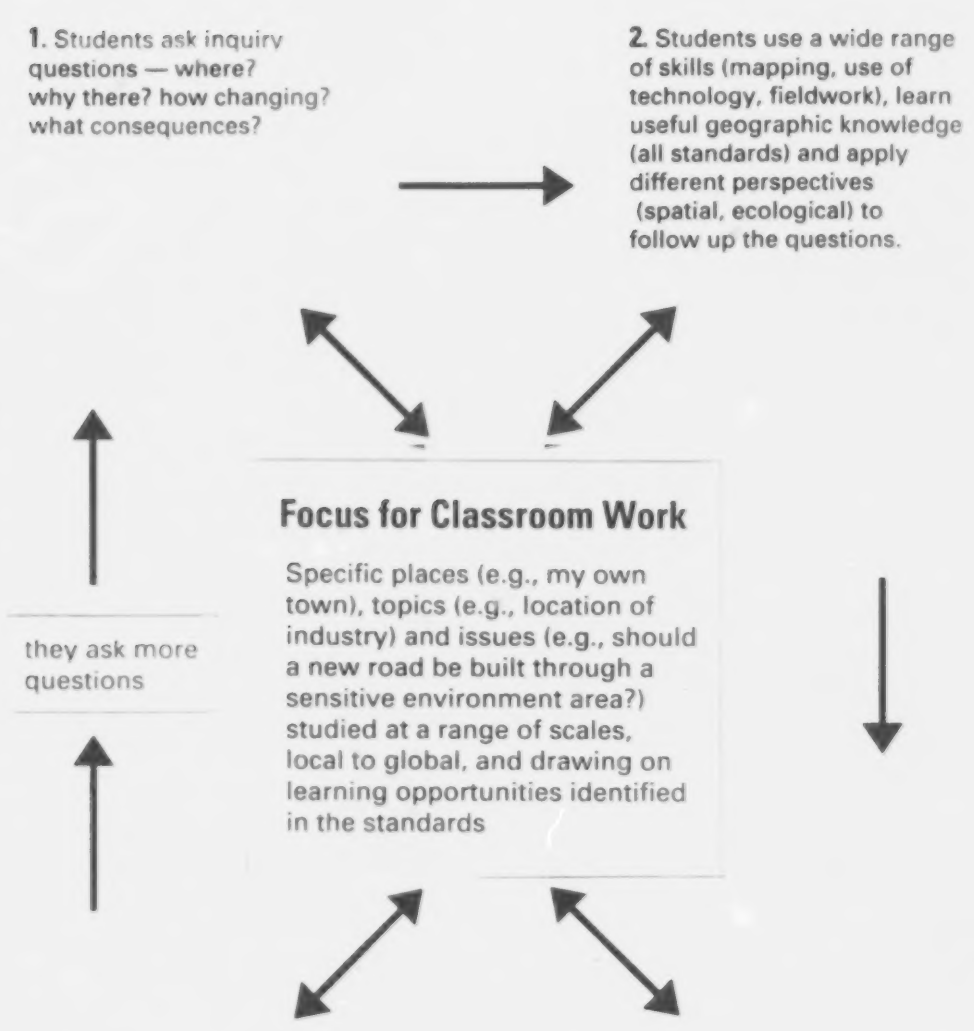
What standards are already included in this unit?

Which standards need to be added?

Which lessons need to be dropped?

What resources need to be included?

The Process of Geographic Inquiry


1. Students ask inquiry questions — where? why there? how changing? what consequences?
2. Students use a wide range of skills (mapping, use of technology, fieldwork), learn useful geographic knowledge (all standards) and apply different perspectives (spatial, ecological) to follow up the questions.
Focus for Classroom Work
Specific places (e.g., my own town), topics (e.g., location of industry) and issues (e.g., should a new road be built through a sensitive environment area?) studied at a range of scales, local to global, and drawing on learning opportunities identified in the standards
they ask more questions
3. Students reach understanding of important geographical concepts (place, region, movement, location, human-environment interaction) in all standards
4. Students apply geographic knowledge, skills and understanding to analyze and find solutions to real-world problems (all standards but particularly #6)

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Judges' Criteria for Standards Based Unit Evaluation

Geography Skill Oriented

Geographic Basis for the Project
(35 possible points)

Section I: Scoring (5 is high)

1. The unit is challenging and reflects geographic scholarship ---------- 5.4.3.2.1
2. The overview statement is clear and concise. ---------- 5.4.3.2.1
3. The unit is developmentally appropriate (geography skill ---------- 5.4.3.2.1 acquisition).
4. The benchmarks and skills are applicable to grade level. ---------- 5.4.3.2.1
5. Inquiry question is thought provoking ---------- 5.4.3.2.1
6. Inquiry question is in line with the overview statement. ---------- 5.4.3.2.1
7. Geographic tools are appropriately incorporated into unit ---------- 5.4.3.2.1

TOTAL POINTS _____

8. Technology is incorporated in the unit to encourage ..... 5.4.3.2.1 interest in geography. (Optional)

Section II: Comments

Positive Comments
- ☐ Good use of geographic concept.
- ☐ Clearly stated inquiry questions.
- ☐ Good use of geographic tools.

Constructive Criticism
- ☐ Topic not treated geographically.
- ☐ More geography tools.
- ☐ Follow format.
- ☐ Inquiry question not clear.

Comments: _____

Standards Based Focus

Standards Based Lessons and Activities
(25 possible points)

Section I: Scoring (5 is high)

1. The activities/lessons focus on the standards identified ---------- 5.4.3.2.1
2. The activities/lessons are grade level appropriate ---------- 5.4.3.2.1
3. The teaching strategies are appropriate and varied ---------- 5.4.3.2.1
4. Student worksheets contain clear criteria/expectations ---------- 5.4.3.2.1 for the activities/lessons.
5. Activities/lessons are challenging and well-thought-out. ---------- 5.4.3.2.1

TOTAL POINTS _____

Section II: Comments

Positive Comments
- ☐ Very creative lessons.
- ☐ Clear standards focus.
- ☐ Good use of individualized activities.
- ☐ Varied teaching strategies.

Constructive Criticism
- ☐ Standards not clearly defined.
- ☐ Lessons inadequately reflect standards.
- ☐ Insufficient rigor to lessons.
- ☐ Developmentally inappropriate activities.

Comments: _____

Rating Lessons/Activities

Usefulness of Material
(25 possible points)

Section I: Scoring (5 is high)

1. The unit is clear and usable to others. ---------- 5.4.3.2.1
2. The resource list adequately identified the sources used. ---------- 5.4.3.2.1
3. The teaching strategies and learning activities provide for ---------- 5.4.3.2.1 individual differences.
4. The unit represents an exemplary body of work ---------- 5.4.3.2.1 that can be easily disseminated.
5. The unit is easily adapted to many different teaching settings. ---------- 5.4.3.2.1

TOTAL POINTS _____

Section II. Comments

Positive Comments
- ☐ Good use of resources.
- ☐ Well written/organized.
- ☐ Great effort spent on project.
- ☐ Easily disseminated.

Constructive Criticism
- ☐ Need to better follow project guidelines.
- ☐ Focus unclear.
- ☐ Difficult to disseminate.

Comments: _____

Assessment

Assessment
(15 possible points)

Section I: Scoring (5 is high)

1. Assessment criteria contains concise/clear guidelines ---------- 5.4.3.2.1 and expectations.
2. Assessment activity results in a demonstrated proficiency ---------- 5.4.3.2.1 of the standards in the unit.
3. There is a well-thought-out scoring guide (rubric) included. ---------- 5.4.3.2.1

TOTAL POINTS _____

Section II. Comments

Positive Comments
- ☐ Well designed rubric.
- ☐ Standards well represented.
- ☐ Assessment tool will aligned with standards.

Constructive Criticism
- ☐ Unclear criteria.
- ☐ Unclear proficiencies.
- ☐ Expectations not reflective of standards.

Comments: _____

Total Score _____

How to Analyze a Curriculum for Gaps and Repetitions

By Katy Lapp

Those who have participated in the time-consuming research required for a comprehensive curriculum review will recognize and appreciate the national and state standards as the state of the art in current research and as a useful tool for analyzing local social studies programs. Whether a district adopts the state standards or develops its own standards to meet or exceed the state standards depends on the extent to which the district's social studies curriculum guide is developed and how effectively it supports the state standards. Every school district in Colorado is unique in its approach to curricular development. Some examples of these diverse approaches include districts that:

- support each building in the development of curriculum independently of its other schools.
- identify the subjects or courses that will be taught in kindergarten through 12th grade, but rely on a textbook series to provide skill and content continuity.
- organize district-level teacher committees to develop curriculum for all schools in the district which may include K-12 goals; behavioral objectives, concepts and skills for every grade/course; and textbooks and other multimedia that support the curriculum.
- develop a detailed curriculum guide with all of the above as well as lessons, strategies and resources that teachers may use to facilitate student learning.

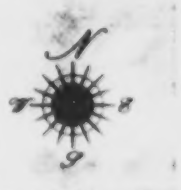
Because every district's needs are different, there is no one procedure for analyzing curriculum. The intent of this chapter, therefore, is to provide some ideas and examples as a starting point for this challenging task.

Who Should Be Involved?

Community and grassroots involvement is essential to the success of this effort and is required by House Bill 93-1313. A suggested first step is to create a plan that will include broad-based representation of people in education and in the community. Some committees and groups to consider are:

- a steering committee with representatives from education and the community
- students and parents
- social studies departments and teachers who represent all grades and/or courses
- representatives of varied cultures and heritages
- building-level committees (PTA/PTO committees, building accountability committees, etc.)
- administrators
- an advisory committee that includes members of the business community, the Chamber of Commerce, Rotary Club, universities, etc.

The steering committee can guide the over all effort, provide continuity, compile information and make recommendations that are based on data accumulated from surveys and subcommittees. The committee should receive training in the standards before embarking upon its important work and include primary, intermediate, middle and senior high school teachers. These teachers can serve as subcommittee chairs and train other teachers who have knowledge and experience in teaching the various courses or grades. A community advisory task force may be formed to review and provide suggestions regarding the work



of the teacher subcommittees and/or the recommendations of the steering committee. A community task force could serve in an advisory capacity for more than one content area.

Gathering Information

The questionnaire that follows this section provides a suggested format for gathering data that will actively involve teachers in identifying how well a district's program matches the state standards. Such a format can be used for each of the six standards across all grade levels.

This kind of survey can be completed through cooperative work in departments, grades or teams. If desired, the overall burden on teachers can be reduced by dividing the standards among various schools in the district so that schools or groups of schools are assigned only one or two of the standards.

The information gathered in such a survey can be used to determine which of the six geography standards are or are not included in the district's curricular and instructional goals and objectives. Individual teachers and schools can be asked to identify options and make recommendations that will allow all students to be as successful as possible in meeting the standards at grades 4, 8 and 11.

Using the Information

After being compiled and analyzed, the information obtained through the use of such a survey will enable the steering committee to:

- Identify potential gaps in the instructional program that can be the focus of further information gathering in the schools. If the data indicates that a district's program doesn't provide students with opportunities to achieve the standards, recommendations for changing the curriculum or sequencing of courses can be elicited from the teacher subcommittees, schools and the community task force prior to the development of recommendations to the school board.
- Develop, revise and adopt district standards. It is acceptable to use district standards, strands and/or goals provided they are comparable to the state standards.
- Combine the activities that support assessment tasks to create standards-based units as appropriate to grade and course. (Model units and activity suggestions for the benchmarks are also available from the State Resource Bank.)
- Develop a training program to help teachers develop standards-based lessons, units and assessment tasks. As units are developed, list the titles on a matrix to determine which standards still require sample units and which should be targeted for assessment tasks at the various grade levels.
- Pilot the model units and assessment tasks and make revisions based on student work samples and teacher recommendations.
- List the model units/activities in the district curriculum guide or in a district resource bank.
- Continue to train teachers in the development of units and in the instructional strategies relevant to the standards-based units, tasks and rubrics.

The procedures that each district adopts to develop or align curriculum to the state standards should apply to history, civics and economic standards as well. The goal is to have spiraling support at every grade level for the content standards and skills assessed at the 4th, 8th and 11th grades. A balanced, integrated curricular framework is essential to preparing students for the challenges and responsibilities they will face in a changing and increasingly complex world.

Katy Lapp is the social studies coordinator in El Paso District #11, Colorado Springs.

Please Compare Our District's Program to the K-4 Standards (One Per Grade Level)

School

Grade Level

Geography Standard 1: Seeing the World Geographically

Students know how to use maps, globes and other geographic tools to locate and derive information about people, places and environments.

Essential Element 1.1:

Students know how to use maps, globes and other technologies to acquire, process and report information from a spatial perspective.

	How much emphasis does the current curriculum place on this expectation? No, Low, Mod, High	This expectation is (L) Lower (A) Appropriate (H) Higher than/for the current D-11 program	Teachers need training (Y) Yes (N) No
1.1 Expectations for K-4			
What students know and are able to do includes:			
• recognizing the characteristics and purposes of geographic representations — including maps, globes, and other tools and technologies			
• displaying information on maps, globes, and geographic models, and in graphs, diagrams, and charts			
• using maps, globes, graphs, models, and computer programs to answer geographic questions			

	How much emphasis does the current curriculum place on this expectation? No, Low, Mod, High	This expectation is (L) Lower (A) Appropriate (H) Higher than/for the current D-11 program	Teachers need training (Y) Yes (N) No
1.2 EXPECTATIONS FOR K-4 What students know and are able to do includes: • drawing a simple map of continents and oceans			
• locating major physical and human features (for example, major cities, countries, bodies of water, etc.)			
• locating places within their own and nearby communities in Colorado			
• locating major physical and human features in the Rocky Mountain region and the United States			
1.3 EXPECTATIONS FOR K-4 What students know and are able to do includes: • identifying the different ways and reasons that places are connected (for example, through the movement of goods, ideas and people			
• making and defending locational decisions for human activity			
• using the concepts of location, direction, distance, scale, movement, and region			

How to Select Exemplary Curriculum Materials and/or Incorporate the Standards Into Existing Materials

By Corine O'Donnell

Although textbooks reflecting the new geography standards have yet to be developed, Colorado schools and districts have available to them a growing number of standards-based curriculum models and materials.

For example, as part of the Geography Frameworks grant, teams of teachers from five Colorado school districts attended a 10-day institute in the summer of 1994 to begin developing exemplary geography lessons and units based on the second draft of the Colorado geography standards. These and other lessons/units that have been developed by Colorado teachers will be available online, or in a CD-ROM version, through the State Resource Bank, beginning in mid-1995.

Another excellent resource is the standards-based curriculum modules developed as part of the *Geographic Inquiry into Global Issues* (GIGI) project, which was carried out by Dr. A. David Hill of the University of Colorado under a National Science Foundation grant. These modules focus on the following student goals: 1) responsible citizenship; 2) geographic knowledge, skills and perspectives; and 3) critical and reflective thinking.

What criteria should teachers, administrators and curriculum developers use in evaluating existing and/or prospective lessons, units and curricula in light of the new standards? Some of the key points to consider are:

- The overall purpose of the lesson or unit (Is it clear? Does it address a geography standard?)
- The inquiry question (Does it focus on a geographic issue?)
- The assessment (Does it assess the stated geography standards?)
- The benchmarks (Do they reflect the benchmarks in the state and/or national geography standards documents?)
- The skills (Are they geographic?)
- The activities (Are they based on the benchmarks? Do they lead students to an understanding of the standards?)

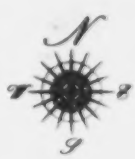
Notice, for example, the interconnection of standards, benchmarks, skills, activities and assessments in this strand of Janet Pommrehn's unit, "Grasslands: A Natural Resource."

Standard: Students know the physical and human characteristics of places and use this knowledge to define and study regions and their patterns of change.

Benchmark: Identification and description of physical and human characteristics of a region and the making of comparisons to other regions.

Skill: Investigate and report on the characteristics of a place.

Activity: Reading, research, experiments and art projects focused on such things as the characteristics of different types of grasslands; their importance as a source of food and other products; and how they are affected by weather, climate and development.



Assessment: Working individually or in teams, students create and make an oral presentation on a diorama replicating the ecosystem of either the Colorado short-grass prairie or the Kenya savanna, both past and present.

In evaluating a geography lesson or unit, here are some specific questions to be considered:

- Does it promote good teaching?
- Is it consistent with and connected to other areas of the curriculum? Is it adaptable to various grade levels?
- Is it organized, coherent and focused on objectives/standards?
- Does it clearly establish what students should know and be able to do at the end of the lesson or unit? How will students' learning progress be measured?
- Does it engage students as active learners, and give them time to think, absorb and work?
- Does it encourage students to ask questions, generate original or unconventional ideas and explanations, and draw on their own experiences in analyzing and solving problems?
- Does it promote and nurture the "joy of geography"?

Corine O'Donnell is a fifth-grade teacher at Campbell Elementary School in Jefferson County School District.

Assessment

Designing Authentic Assessments

By Dr. Tim Heydt

This chapter provides the framework to guide the development of assessment instruments for the Colorado Assessment in Geography at grades 4, 8, and 11. The framework cannot encompass everything that is taught in geography in all classrooms, much less everything that should be taught. Nevertheless, it allows assessment planners to capture the range of geography content and thinking skills that students should possess as they progress through school. It is designed to provide test developers with a blueprint to follow in developing test instruments that is both interesting and challenging to students.

Goals Assessment

In geography, as in all courses in the social studies, the goal of student assessment is to:

- evaluate the progress of students in acquiring, understanding and using **knowledge** (facts, concepts).
- assess the progress of students in acquiring, developing and using a range of general and specific (geographic) **skills**.
- assess student understanding and application of geographical processes and **perspectives**;
- help students develop positive attitudes toward lifelong learning, to explore future opportunities for learning and employment, and to set realistic life goals.
- assess the implementation of the curriculum, and the strategies, methods and resources used in classroom practice.

In striving to meet these assessment goals, the information derived will be provided to a variety of constituents in order that they make informed decisions:

- **students,** who need to make decisions about their learning of geography;
- **teachers,** who must make careful decisions about how they can best help students develop their geographical abilities;
- **school administrators,** who must make decisions concerning the effectiveness of the geography programs in their schools;
- **school boards,** who must set policies to direct positive change in their local schools;
- **public policy makers,** who must make decisions about the best use of resources to develop and maintain geography programs of the highest quality; and
- **the public,** which makes decisions about the effectiveness of their education systems and the people who are responsible for those systems.

Assessment Principles

Because each of the above groups needs information from assessments to make its own special kind of decisions, assessments must be based upon a set of guiding principles that provide a coherent rationale at all levels. This framework embraces five guiding principles:

1. All assessments will be aligned with the geographical knowledge, skills and processes expected of all students in Colorado. When assessment is closely aligned with the curriculum, meaningful inferences can be made, and the curriculum itself becomes the standard

against which an assessment is made.

2. Assessment practices will promote the development of geographical power for all students in Colorado. Good assessment must provide information about what students know and can do in using geography.
3. A variety of effective assessment methods will be used to evaluate learning standards of geographic education in Colorado. The methods should be substantially performance-based and criterion-referenced. They should encourage and allow the unrestricted use of the normal tools of geographic teaching and learning.
4. The assessments will serve as a teaching and learning tool as well as a reporting tool.
5. Assessment of geography's Three Content Outcomes must complement the instruction of geography's Five Themes (Figure 1), and Six Standards in such a manner that the assessor can clearly distinguish the student's knowledge, understanding and ability to apply the content (Figure 2).

Assessing Geography

Schools and teachers must remain focused on what is essential to know and be able to do. For the past 10 years, geographic content has been organized around the five "fundamental themes" and is now being reorganized to include the national standards. This gives a clear framework of how to organize instruction. Before writing any geography assessment questions, we need to ask ourselves some important questions:

- What geographic knowledge and skills should students possess?
- How should the objectives of geographic knowledge be assessed?
- Does the assessment meet curriculum goals?
- Is the assessment meaningful to students?
- Does the assessment promote good teaching?
- How do we intend to use the results?
- Does the assessment lead to higher-order thinking?
- Does the assessment measure what students can do?
- Does the assessment promote individual and group activities?

It is important to remember that geography instruction can also occur within the context of science, history, language arts, or other content areas. Similarly, assessments should utilize demonstrations from other disciplines (mathematics, reading, science), and use the six model content standards as a means of clarifying and measuring students' knowledge, understanding and application of the components of the task.

Adoption of assessment methods and instruments is subject to a number of variables. They may include school board, school and department policy, student readiness, resource availability and accessibility, class size, teacher readiness and so on. In the final analysis, however, the range of evaluation methods and instruments gives students the opportunity to display all their talents and to capitalize upon their interests. Various assessment strategies make allowances for personal circumstances such as learning styles, personality and domestic conditions in the student populations.

Figure 1

INSTRUCTION → ASSESSMENT

Organizing Ideas	1994 Assessment Framework
Five Themes of Geography*	**Three Content Outcomes**
Location Position on Earth's Surface	**Space and Place** Knowledge of geography related to particular places on Earth, to spatial patterns on Earth's surface, and to physical and human processes that shape such patterns.
Place Physical and Human Characteristics	
Human/Environment Interaction Relationships Within Places	**Environment and Society** Knowledge of geography related to the interactions between environment and society.
Movement Humans Interacting on Earth	
Regions How They Form and Change	**Spatial Dynamics and Connections** Knowledge of geography related to spatial variations and connections among people and places.

INSTRUCTION ← ASSESSMENT

* *Guidelines for Geographic Education — Elementary and Secondary Schools*. Joint Committee on Geographic Education of the National Council for Geographic Education and the Association of American Geographers, 1984.

Figure 2 NAEP Geography Assessment Framework Elements

Cognitive Dimension	Content Dimension		
	Space and Place	Environment and Society	Spatial Dynamics and Connections
Knowing	Where is the world's largest tropical rain forest.	What mineral resources are often extracted by strip mining?	What factors stimulate human migrations?
Understanding	Why are tropical rain forests located near the equator?	Explain the effects of strip mining and shaft mining on the landscape.	Explain the motivations of modern-day Mexicans and Cubans for immigrating to the United States.
Applying*	Support the conclusion that tropical rain forests promote wide species variation.	How can both economic and environmental interests be reconciled in an area of strip mining?	Compare current settlement and employment patterns of Cuban and Mexican immigrants in the United States.

Note: Example questions are illustrative only, and are not meant to represent the full array of assessment content.
*Applying = A range of higher-order thinking skills.

Authentic Performance Assessment

In the academic discipline of geography, authentic assessments are integral to full and complete answers to the questions posed earlier. The assessments allow the students to become active learners and demonstrators of knowledge, understanding and abilities. Authentic assessments encourage projects, experiments and presentations. They provide for both cooperative-learning opportunities and individual learning styles. Carefully designed authentic performance assessments also allow for ethnic and other individual differences.

Authentic performance assessments stress the positive aspects of the student's abilities. They encourage the student to work toward his or her strengths; the result is a student who gains confidence

and begins to take initiative in his or her own educational program.

Authentic performance assessments that are effective and informative:

- do not rely on unrealistic and arbitrary time constraints
- present known-in-advance questions or tasks
- have such value that school schedules and structures support them
- promote higher levels of thinking by the student
- point the student toward higher levels of demonstrated understanding and capabilities
- are integrated with other academic disciplines
- engage the student
- involve somewhat ambiguous tasks
- require some research by the student
- are attempted by all students

Types of Authentic Performance Assessments

An authentic performance assessment can take a variety of formats. It could be:

- an oral presentation to a community group or business interested in a pertinent issue;.
- an organized debate, short stage play, speech, or wax museum with a narrator that describes or explains how an issue developed and how it should be resolved;
- Computer, slide or video presentations could be used to address issues or to sell a particular aspect of an assessment project;
- in the form of a project, which could be assembled by an individual, a group or a combination of both;
- in the form of a portfolio in which one or more students prepare "packets" of their best work.

In each of these examples, the cornerstone of the assessment is that the student engagement in realistic and the tasks are measurable, and the process of the assessment becomes as important as the outcome.

Ideally, the student is encouraged to adopt an assessment mode appropriate to the specific topic/question as well as to his or her own strengths and interests. The following are brief illustrations that could be seen within the assessment setting.

Mapping Exercise

Topic: Develop maps using fundamental cartographic principles including translating narratives about places and events into graphic representations.

Activity: After we anchored our ships in the ocean and went ashore to explore, we marched west. The forest was so thick we could only travel three miles in the first two days. Then we came to the mountains and climbed to the top. A rushing river flowed west out of the mountains. Two miles further we came to the coast. It was obvious that the area we were exploring was an isthmus.

The student is provided a 5" x 5" box in which to draw a map of the region described above. The student is also supplied with a compass rose and is directed to include all the geographical elements mentioned in the description. A scale to indicate distances is also included.

Scoring Guide

Scoring Rationale: Student demonstrates an understanding of direction, isthmus, and simple mapping.

4 Complete. The response includes an accurate map in which at least 4 elements are correctly placed. the response must be an isthmus and have direction of travel and river correctly.

3 Essential. The response includes a map in which 3 elements are correctly

placed. The response may be a peninsula or an island.

2 **Partial.** The response includes a map in which at least two elements are correctly placed.

1 **Inappropriate.** The response does not include a map or the map shows none of the elements correctly.

Note: No answer that gets direction of map wrong can get more than a 2. Use of scale is not necessary to get a 4.

Features of a Map:

- east coast
- forest
- mountains
- river flowing west
- west coast

* Released test item from 1994 NAEP Assessment in Geography

Futher inquiry:

Is the assumption that the land form is an isthmus valid? What else might it be, or what would you have to do to find out for sure?

On the way back to your ship, what kinds of information would you start to record about life forms, habitat, etc.?

Debate

Topic: "How well would Colorado homes and businesses withstand an earthquake of magnitude 6.5?"

Activity: The teams select their side of the topic, perform the research necessary to gather the pertinent information, practice their presentations and participate in an organized debate. They may use audio-visual aids to support their cause.

They are evaluated by parents, students and interested community members, such as representatives of the local construction trade.

Play

Topic: "What alterations to the natural environment and to the native people themselves were made in the first two years of the Pilgrims' arrival in Plymouth, and how were the alterations accomplished?"

Activity: Students will be organized into teams of six or seven. They will research the first two years of Plymouth, put their information into outline form, and write a short stage play that will demonstrate what human-environment interaction took place and why. They will present the play to other students and to environmental groups from the local area.

Speech or Wax Museum

Topic: "Compare the physical, political, economic and cultural changes that took place in Europe after November 11, 1918, with those since June 6, 1944."

Activity: Students will be organized into teams of four or more. They will research the topics and develop visual aids to assist them in presenting their findings to parents and community members. The format of their presentation will be a panel discussion, speeches or a series of detailed wax museums that will highlight the changes.

Video or Slide Presentation

Topic: "How has this community changed physically since 1960?"

Activity: Working individually or in pairs, students will research the history of the community via library materials, personal interviews and city map and data collections. They will devise a slide show or video presentation that will "take" the seated audience to the various sites within the community and explain to them with a timeline how and why the community has changed. A computer-mapping program can be utilized to project future changes.

Demonstration

Topic: "Grasslands and how they change over time"

Activity: A rubric is a set of criteria for scoring student work. Although the term has been used for years, it has taken on a new patina within the context of authentic assessment. Unless teachers know how to score work, they can't make reliable, consistent judgments about a student's ability. A good rubric provides: 1) a description of the varying levels of achievement, established scale, and emphasizes scoring based on shared standards as opposed to counting errors; and 2) "upfront" expectations about what will be assessed to give students indicators of where they are in relation to where they need to be. Rubrics also help teachers and students realize that there is a consistency in the rating of performances.

Here is an example of a possible scoring rubric developed by Carla Stonbraker, Teacher on Special Assignment in Aurora Public Schools for the "Grasslands: A Natural Resource" unit. Students were directed to construct a diorama of either short prarie grass or Kenya savanna grass and orally present a description with recommendations for protecting the grasslands.

Scoring Rubric

The model ecosystem:

4 Includes plants, animals, people, homes and one or two other systems (weather, transportation)

Shows the changes from the past to the present of several of the systems

3 Includes plants, animals, people and homes

Shows the changes from the past to the present of at least two of the systems

2 Includes most of the required systems

Shows the changes from the past to the present of one system

1 Includes some of the required systems

Shows either the past or the present

In the presentation the student:

4 Explains:

- how each part of the ecosystem has changed or stayed the same through the use of details
- the overall effect of weather on the ecosystem

Gives an opinion about saving grasslands in the future supported with specific reason s and facts

3 Explains:

- how each part of the ecosystem has changed or stayed the same
- the effect of weather on the ecosystem

Gives an opinion about saving grasslands in the future supported with reasons and facts

2 Explains:

- how most parts of the ecosystem have changed or stayed the same the the effect of e weather on the ecosystem

Gives an opinion about saving grasslands but does not support it with reasons

1 Explains:

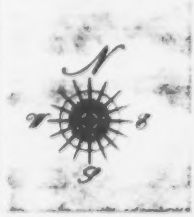
- how one or more parts of the ecosystem have changed or stayed the same
- the effect of the weather given inaccurately or not at all

Gives an unclear statement about saving grasslands or omits altogether

Project

Topic: "Develop an advertising campaign that will attract investors and families to the new community you are building near the just-constructed manufacturing plant."

Activity: Students, working in groups of



three, will research the best location for the community after considering the most likely location for the manufacturing plant. They will analyze their own community to determine what human and physical components are necessary for a community to develop and thrive. They will examine transportation and communication systems, recreational opportunities and economic factors that would benefit their community. With this and other information of their choosing, they will design and present an advertising campaign.

Portfolio

International Student Magazine is a year-long project that the class works on periodically as each student applies his or her learning to a country of his or her choice. Each part of the portfolio serves as a culminating activity for units of study from the classroom. Each student, throughout the year, works on and compiles an international magazine, which is structured around the topics of physical geography, interdependence, development, population, conflict, the environment and human rights in a country of the student's choosing. Besides helping students to better understand these topics, a multitude of learning skills are used. These include research skills, mapping, atlas use (including the use of thematic maps), table and chart interpretation, graphing, note taking, writing and word-processing. (From Martha Riley, Portfolio Project, Eaglecrest High School, Cherry Creek S.D., Aurora, Colorado.)

Detailed Assessment Illustrations

Three clear illustrations of authentic assessments were taken from the sample units presented earlier in this framework document. They are presented here to demonstrate how authentic assessments are directly tied to the objectives of the unit. They each follow the assessment principles outlined in this chapter.

Example One:

The first example of an authentic geography assessment requires the student to develop a project as well as orally present the information gathered while assembling the project. It is taken from the lesson entitled "Grasslands-A Precious Resource" by Janet Pommrehn of the Denver Public Schools.

Pommrehn's lesson had as its objective that the children would compare grasslands of the past with grasslands of the present. In addition, they would be able to project what role grasslands would play in the future.

In assessing the student progress within this unit designed for grade levels 1 through 4, the students individually or in teams were asked to study either the Colorado short grass prairie or the savanna located in Kenya. After making their choice, they were instructed to make a diorama into a recognizable ecosystem by adding human and physical features that would be found in that environment. They were asked to utilize some art form, and they were asked to divide the diorama in half. One-half was to depict the previous ecosystem and the other half would illustrate the present ecosystem. Then they were asked to present the diorama to the class, explaining its contents orally, including an explanation of the climate of each half and how this factor affected the ecosystems shown in the diorama.

The conclusion of the oral presentation should find the student explaining why grasslands are considered to be a region to themselves. In addition, the student is expected to project the future role of grasslands throughout the world and should be able to justify his/her reasons for saving or abandoning the grasslands.

Example Two:

In the middle school unit entitled "Kids' Community Guide" by Nancy Morlock-

Hollins and Marsha Spanswick of Colorado Springs District 11, the students are expected to become aware of a variety of activities available in their community. With the information gained, they will explore barriers that prevent them from enjoying these activities. Finally, they will generate a children's guide to activities that are fun within their community.

The multi-phase assessment designed for this unit allows for both individual and group performance involving student partners in two separate schools. It presents a meaningful task to the students, leads to higher-level thinking and establishes an appreciation of the students' own values. Finally, it produces a useful product that other students will appreciate.

In the assessment, each individual is required to create a portfolio that will include a mental map, a lot of interactions with his/her partner and a log of comments the student has made about the map from the partner's school. The partners will complete joint worksheets and a color-coded map that depict differences and similarities in their opinions and perspectives. Each student will write a thought paper answering these questions:

- What are some new places you would like to explore, and why?
- What do you think causes you and your friends to go to specific places?
- What do you think causes you and your friends to avoid specific places?

In addition to completing that individual activity with his/her partner at the other school, each student will work with a group within his/her school to design, administer and compile the results of a survey which describes the best and the worst places to go within the community. The group will use the information to produce a kids' guide to the community that will be published in a local newspaper.

Example Three:

In her high school unit entitled "Are We Trading Away Our Rain forests?" Ginny Jones of St. Vrain Valley School District expects the students to learn about the economic issues that affect the Brazilian rain forests. In particular, Jones expects the students to analyze U.S. — Brazil trading patterns and consider the economic decisions and perspectives of various parties within the United States. They will analyze the impact that the parties' consumption decisions have upon the Brazilian people and their environment.

To assess this unit, Jones requires the students to work within a group setting as well as provide evidence of individual achievement. In doing so, she directs the students to research how economics impact the rain forest, employ graphic arts as they present the information and suggest possible alternatives that may conserve the rain forest. She goes on to require the groups to participate in a panel simulation in which they will research, discuss and develop possible trade policies that would promote positive human-environment interaction within the rain forest. Jones further stipulates that the group present their proposal(s) to the class or a group of local adults.

Thus, Jones has designed a comprehensive authentic assessment that plays on the strength of the students who are artistically talented, those who are adept at researching and compiling data, those who are skilled at creative thinking and problem solving, those who are skilled at working cooperatively with other people to come to a common solution and those who are good at public speaking. It serves as a teaching lesson as well as an evaluative tool, one that will impact the students' appreciation of the geographic content outcomes.

Conclusion

This framework brings appreciation of

geography's scope and depth to assessments of student knowledge about their own country as well as about places around the globe. Geography is integrative, because it provides an understanding of how people perceive, utilize and modify their physical and cultural settings. Geographic inquiry is also speculative, as students seek the best solution to modern geographic problems. Authentic assessments are essential not only for comprehending contemporary social and environmental issues but also for providing a basis for understanding society as it relates to land use, human movements and environmental perception.

Geographic inquiry is spatial and concerned with the ways in which people interact from place to place. The patterns, processes and places that are shaped by this spatial interaction are the essence of geographic content. Authentic performance assessments provide a means by which to gauge student mastery of geographic principles, skills and perspectives. Students who can demonstrate mastery of geography will have a greater appreciation for the productive and creative roles they can play as citizens in the 21st century.

Dr. Tim Heydt is the principal at Big Thompson Elementary School in Thompson Valley School District.

Instruction

Thinking Spatially

By Don Spano

Spatial, as defined in ***Geography for Life***, pertains to space on the Earth's surface. Geographers concentrate on space and time. The spatial structure of cities, the layout of farms and fields, transportation networks, river systems, climactic patterns and much more, interrelate when one examines a geographic region. As students come to understand geographic regions, they not only learn where they are located, but also why they are located where they are, how they are organized and what their future is likely to be as they interact in a changing global environment.

One of the realities of life is that groups and countries draw boundaries around themselves and divide space into territories. Some see the concept of territoriality — the emotional attachment to and the defense of home lands as a root explanation of much of human action and response. On a more individualized basis, each person claims as personal space the zone of privacy and separation from others which our culture or physical circumstances require or permit. Along with personal space is activity space, an area within which we move freely, sharing with others who are also going about their daily activities.

It is important to understand how this concept of spatiality relates to the state and national geography standards.

Using maps and other geographic representations, tools and technologies to acquire, process and report information from a spatial perspective.

Maps are graphic representations of selected aspects of the Earth's surface. They represent geographic information about selected physical and human features. Abstract features such as political boundaries, population densities and distribution and lines of latitude and longitude are also depicted. Regardless of the spatial information shown and the limitations of depicting a round Earth in flat surface, maps constitute a critical element in geographic education.

How then are maps used to answer particular local and regional questions? Review Janet Pommrehn's unit "Grasslands: A Natural Resource." Before concentrating on a comparison between Colorado's short grass prairie and the savannas of Kenya, her students first chart and characterize the spatial distribution of the world's grasslands. This visual summary sets the entire tone of the unit, but more importantly, gives each student a spatial perspective from which to develop inquiry questions as well as a pathway to their answers.

Using mental maps to organize information about people, places and environments in a spatial context.

In recent years, geographers have become aware of the role of mental maps in the spatial behavior of people and their perceptions of places. Individuals develop mental maps based on their experiences, attitudes, beliefs and sometimes rumors. Mental maps may be highly subjective and may depart greatly from reality. Yet people commonly make decisions on their routes of travel, destinations for vacations and business and places to avoid based on their mental maps. (see Figure 1). The improvement of a student's mental map be one of the most valuable benefits

derived from studying geography. A student's area of awareness generally improves with the increasing mobility that comes with age, affluence and education and may be enlarged or restricted for different social groups within a city.

Three children, aged 6, 10 and 13, who live in the same house, were asked to draw maps of their neighborhood (Figure 2). Note how perspectives broaden and neighborhoods expand with age. The square block (b) is the neighborhood for the 10-year-old. The wider perspectives of the 13-year-old (c) are reflected in her drawing. Next, three mental maps of Los Angeles are illustrated in Figure 3a, b and c. The upper-middle-income residents of Northridge and Westwood have expansive views of the region, reflecting their mobility and area of travel. Residents of Boyle Heights and Avalon, both minority areas, have a more restricted and incomplete mental image of the city. Their limited mental maps reflect and reinforce their spatial isolation within the metropolitan area.

A good example of integrating mental maps is illustrated in "Kid's Community Guide" by Nancy Morlock-Hollins and Marsha Spanswick. This unit begins by asking "What is your world?" and then asks students to develop a free-form mental map of the places they go to on a regular basis. This map is then shared with partners from the same school but different neighborhoods, then exchanged between schools within the district and city.

This standard not only stresses "local" mental maps but also a global understanding. Students will not always have access to maps, globes and/or atlases, so it is important students understand the spatial relationship of continents, countries and oceans. As they read and watch current events, their mental map will assist them in understanding the event's location and its influence on neighboring countries and regions. As they progress in their education and strengthen their mental map with physical and human geographic phenomena, they will be able to review current events in terms of their geographic relevance and develop positions and solutions based on geography.

Analyzing the spatial organization of people, places and environments on the Earth's surface.

Central to geography is the belief that there is pattern, regularity and reason to the locations of physical and human phenomena and that there are spatial structures and processes which give rise to them. Students must be encouraged to think about all aspects of the spatial organization of their world. Two examples can be used to understand this standard.

First, population patterns. In studying a world population density map, students can readily conclude where the world's population is concentrated (coastal areas, major waterways, Northern Hemisphere) and the locations of major and minor clusters. Next, by combining this with political, climactic, vegetation and landform maps, students can then determine the whys behind the population distribution. Lastly, they can begin to formulate positions on whether or not a population crisis exists and, if so, develop recommendations for solving this problem.

Secondly, the spatial distribution of National Football League cities. Interestingly, 23 of the 28 NFL cities are located on or near major bodies of water, while five cities (Atlanta, Denver, Dallas, Indianapolis and Phoenix) all grew to major urban areas despite the lack of this feature. Using a map to demonstrate spatial thinking is an example of a geographer's perspective. What at first might seem to many as simple NFL cities can lead to, by asking spatial questions, why large areas have few, if any NFL teams and why are the Great Plains cities home to few football teams? Why does the northwest region of the United States

have only one NFL team? Using a variety of geographic information (population, landforms, etc.), students can begin to answer these questions.

Conclusion

Geography is concerned with the spatial dimension of human experience (space and place). The space of Earth's surface is the fundamental characteristic underpinning geography. The essential issue of "whereness" helps individuals contemplate the context of spatial relationships in which the human story is played out.

Understanding spatial patterns and processes is essential to appreciating how people live on the Earth. People who approach knowing and doing with a habit of inquiring about whereness possess a spatial perspective.

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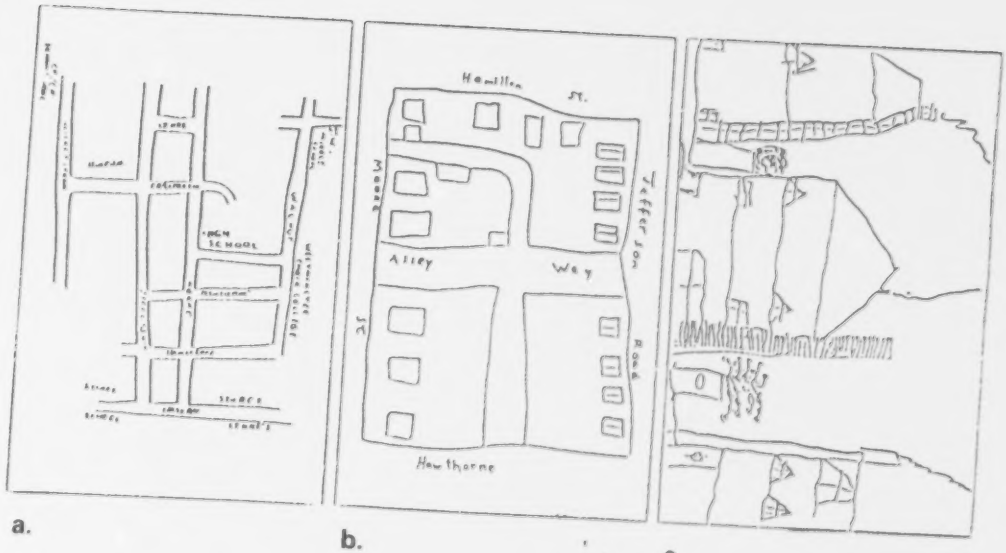
Don Spano is a geography instructor at the University of Southern Colorado in Pueblo, Colorado.

Figure 1

Figure 2



a. b. c.

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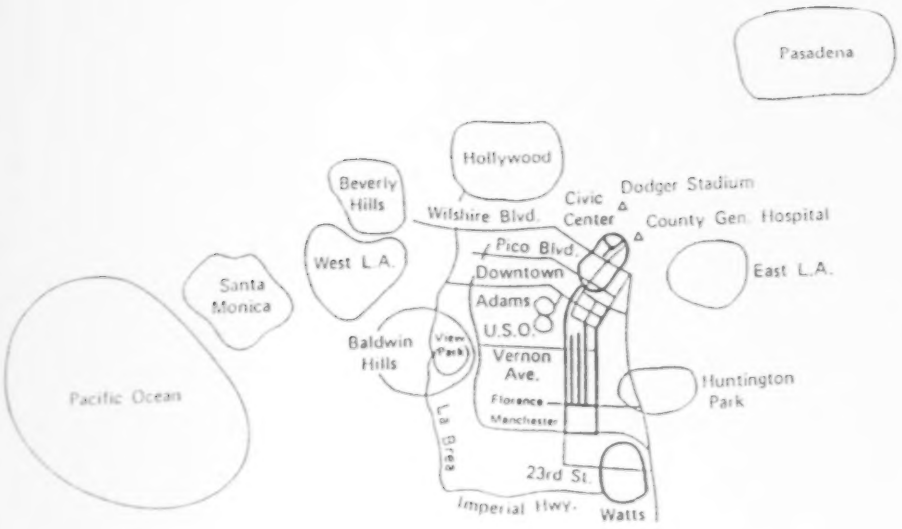
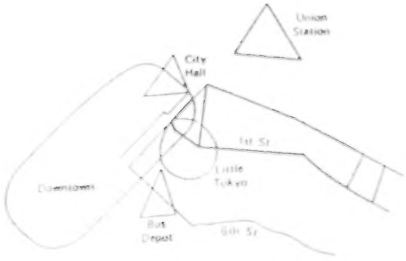
Figure 3a



Los Angeles as Viewed by Black Inner-City Residents (Avalon Community). Thicker lines delimit areas of more familiarity. Note emphasis on corridor between downtown and the Watts area. *Source:* Redrawn with permission from Los Angeles Department of City Planning, *The Visual Environment of Los Angeles*, Los Angeles, 1971.

Figure 3b



Los Angeles as Viewed by Low-Income Hispanic Residents (Boyle Heights Community). Thicker lines delimit areas of more familiarity. Note limited areas of familiarity. *Source:* Redrawn with permission from Los Angeles Department of City Planning. The Visual Environment of Los Angeles, Los Angeles, 1971.

Figure 3c

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Part 2
Instruction

Los Angeles as Viewed by White Upper-Middle-Class Residents (Westwood Community). Line thickness varies with intenseness of familiarity. Note extensive area of awareness extending from Long Beach in the south to the San Fernando Valley in the north. *Source:* Redrawn with permission from Los Angeles Department of City Planning. The Visual Environment of Los Angeles, Los Angeles, 1971.

Geography and Technology

By Sophia Emmanouilides Linn and Ginny Jones

As geography is the study of the physical and human components of the world, it seems logical that students of geography study the world as directly as possible. Geography classes belong on field trips or on exchange programs, allowing students to experience first-hand the complexity and diversity of the planet. Unfortunately, a globe-trotting, mobile classroom is unrealistic for most teachers, so the world must be brought to life within the walls of the classroom by other creative means. Today, technology has the capability of enlivening the geography classroom, whether through interactive computer programs, geographic information systems or real-time telecommunications. In essence, the computer screen can become an exploratory window to the world.

If schools are to keep up with the societal demands for a computer-literate populace, teachers must make the effort to keep abreast of technological advancements. While it is well accepted that computers, and technology in general, have become increasingly important in our society, it may be less clear what role they play in the geography classroom. Simply put, technology can help students visualize spatial concepts as well as organize and analyze spatial data.

Studies suggest that technology can enhance student learning, increase the amount of instruction and significantly improve learning retention. Similarly, teaching with technology lends itself to more exciting and adventurous methods of presentation, thereby keeping students more involved and enthused.

This chapter focuses on how teachers can use technology in the classroom to enhance student learning, involvement and retention. First, we will define what we mean by technology (the technology that geographers use vs. the educational technology used for teaching geography). Then we will consider whether or not the effort and expense of investing in technology can be justified. Following this will be a breakdown of classroom configuration possibilities and hardware components that are particularly useful for the geography classroom. Finally, some examples will be shared regarding how best to use technology, depending on available resources.

Technology for Geographers vs. Technology for the Geography Classroom

The contents of the geographer's tool box — the technology geographers use in their work — have changed considerably since the days of paper maps and simple compasses. Advanced technology has introduced complex new tools for geographic research and spatial analysis that are revolutionizing geography.

If students are to understand the breadth and depth of geography, it is important that they know what "real" geographers do and what kinds of tools they use, such as:

- **Computer cartography,** which is the construction of maps with computer assistance. The graphic display of geographic information is an essential tool for geography.
- **Remote sensing,** which refers to acquiring information about any surface without coming into direct contact with it. In geography, it usually refers to satellite images and aerial photographs

used for observing surface features of the earth. These images can be brought into computer programs and analyzed in numerous ways.

- **Global Positioning System (GPS),** which refers to a series of satellites that enable carriers of GPS receivers to obtain the exact latitude and longitude (or other) coordinates of a given location. GPS is growing in popularity and usefulness across disciplines.
- **Geographic Information Systems (GIS),** which are computerized systems that allow layering of information tied to locations in space, facilitating spatial analysis and organization of geographic phenomena.

All of the above-mentioned tools are taught at the university level, but they certainly can be introduced to students in earlier grades. Simplified presentations of these concepts can enhance student learning in the long run. For instance, to introduce GIS, teachers can use overheads with images of the same place but showing different features. When the transparencies are overlaid, students can see spatial patterns and begin to analyze why things are where they are and look for relationships.

Similarly, students can view aerial photographs of their hometown and discuss the patterns of development or expansion, or select probable sites for a new school or shopping center, based on overlays showing transportation systems, growth, land use patterns etc. Computer cartography can be introduced by having students use a basic graphics package to draw a sketch map between their home and school, thereby learning the fundamental elements of mapmaking.

In general, educational technology refers to computers and other devices that enliven the traditional classroom. A geography classroom can be enhanced by a single computer or by an entire lab equipped with CD-ROM drives, laserdisc players, scanners, modems etc. The extent to which technology is used depends on the teacher, the classroom, the school and the district. Regardless of the computer system used or the quality of the tools, geography lessons can be enriched by incorporating technology. From using a simple word processor or a database, to communicating via modem to schools around the globe, the spectrum for using technology in the classroom is wide and varied.

Classroom Hardware and System Configurations

There are some fundamental components to setting up a technology-equipped geography classroom; however, the combinations of possible configurations are limitless. Given a computer and a printer, what are the additional pieces that can enhance the capabilities of this teaching system? Listed below are descriptions of the most common computer peripherals for classroom use.

- A "compact disc/read only memory" drive reads **CD-ROMs**. The drive can either be an integral part of the computer itself or it can be a separate piece of equipment that is attached to the computer. The CDs played by the computer are similar to music CDs, but in addition to sound, they also contain text, graphics and/or video. "Read only" means they cannot be changed by the user.
- A **laserdisc** player can be connected to a video monitor (similar to a VCR) and can be controlled either directly or via a computer. Videodiscs are larger than CD-ROMs and are also "read only." Video images may be accessed by time or frame number, usually within three seconds.
- **A liquid crystal display (LCD) panel** combined with an overhead projector allows the user to display the computer screen large enough for an entire classroom to read.
- **Scanners** digitize graphics, enabling "hard copy" images to be used and

manipulated by the computer. The image can then be incorporated into many software applications. With OCR (optical character recognition) software, text can be scanned and used in word processing, authoring and other programs.

- A **modem** allows a computer to connect to other computers via a phone line. Once connected, vast databases of information become available to the user and electronic mail may be exchanged with other users throughout the world.

There are a number of possible setups for a technology-equipped geography classroom. Electronic configurations range from just one computer in the room, to a mini-lab of four to eight computers, to access to a full-blown lab with enough computers for each student. One or all of the computers can have the above-mentioned peripherals for student use. Deciding among these options depends largely on the commitment and budget of both the district and school. Creativity and fund-raising have incredible potential for converting even the simplest classroom into a "high-tech zone." Often parents or local businesses are willing to make donations of older computer equipment to a school or classroom.

A common question in setting up a new lab concerns which computer platform to use, Macintosh or IBM/DOS-based. Selecting between Macintosh and IBM/DOS computers may be a district, school or teacher decision. The peripherals mentioned above, as well as good educational software, exist for both platforms and are comparably priced.

Software Options

A multitude of electronic tools makes it possible for students to complete a wide variety of projects to demonstrate their geographic understanding and skills. Using these tools enhances students' experience in geography, increases student interest and motivation, and provides the opportunity for students to "do" geography as well as "learn" geography.

Software for the geography classroom can be divided into five broad categories: general purpose software (word processors, databases, spreadsheets, simple graphics programs); interactive resource or reference programs (atlases, encyclopedias, thematic CDs and laserdiscs, multimedia packages, simulations and games); authoring programs (HyperCard, HyperStudio, LinkWay etc.); real-time interaction (telecommunications); and "real" geography tools (cartography, GIS, remote sensing etc.).

General-purpose software can be used in the geography classroom in the following ways:

- Word processors (in combination with outliners, spelling and grammar checkers, electronic dictionaries and thesauruses): Students write essays or reports, produce travel brochures, class magazines, newspapers etc.
- Databases (classroom collections, commercial or on-line databases): Students can store, access and analyze data and hypothesize about places based on the information gathered from the organized data.
- Spreadsheets (charts, graphs): Students can enjoy the ease and efficiency of producing charts and graphs from data. They might also conduct "places-rated" activities, test hypotheses etc.
- Graphics programs (draw and paint programs): Students can create sketch maps, draw images of places or produce graphics to include in other projects, such as images to represent agricultural or manufactured products on thematic maps.

Interactive resource programs are extensive, varied and generally easy to use. Very often, students can use these

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One Teacher Speaks on Hardware...

For me, the absolute bottom line includes "The Big Three" — one computer with at least 8 RAM, an LCD panel and a printer. Perhaps I'm spoiled, but I'd pay for these components from my personal checkbook were I not able to obtain adequate school or district support. Arranging for just one computer in the classroom will enhance your productivity as a teacher. You can efficiently produce student handouts, record grades, keep databases of student information, produce transparencies, create maps and so on.

With the addition of an LCD projection panel, you can project anything you may have on screen, including class notes or on-line transparencies, tailored specifically to the class at hand, or demonstrate software and projects, such as authoring programs or sketch maps. A printer is essential, whether it is of the dot-matrix variety (cheaper but noisy and often slow), an ink-jet (reasonably priced and does most jobs well) or a laser printer (more expensive but offers better resolution and is generally fastest).

In addition to "The Big Three," I recommend "The Next Two" — a CD-ROM drive and laserdisc player. These devices provide teacher and student with access to a wealth of resources from a wide array of disciplines and sources. Teachers can use video clips to enhance lessons, and students can use the discs as resources for reports or presentations. As graphics are invaluable additions to the learning experience, having thousands of images at your fingertips is a real advantage of having a CD drive and/or a laserdisc player.

Next on my list are three to eight additional computers, with or without CD drives or laserdisc players attached. Writing assignments are a regular feature in my classroom, and students can elect to compose their essays on a word processor at these stations. Very often, students work in cooperative groups. Having up to eight stations enables students to work in pairs or triads to complete group projects. In my case, students also have access to my computer (with all the peripherals) when working on technology projects. Be creative about arranging a mini-lab: Check the media center for loaners and try to borrow computers from other teachers for short projects.

After the equipment mentioned above, my next preference is access to a couple of scanners. Again, students are visually and graphically oriented. Scanners allow students to add pictures to their desktop-published brochures, class magazines or HyperCard stacks.

Finally, a modem and phone line allow both teachers and students to send and receive electronic messages all over the world, and also provide access to research libraries and huge databases of information through any of several on-line services. Many schools may have this on-line potential in the media center or writing lab, if not in individual classrooms.

programs without extensive teacher supervision. Here's a sample of these programs and how they can be used:

- Reference materials. Electronic encyclopedias, atlases and other thematic CDs are very useful resources for students. When completing traditional research papers or producing multimedia products, students can gather information from these sources for their own work. At a minimum, several such resources should be available in the school media center if not in the classroom.
- Prepackaged multimedia products. These are often expensive but usually well-researched and drawn from vast archives of images. Examples include the National Geographic Society's GTV packages on topics such as hurricanes, rain forests, earthquakes and geography in U.S. history. These programs come with laserdiscs, software and manuals. In some cases, the software drives the laserdiscs and provides a wealth of additional related material.
- Simulations. These programs put kids in "micro-world" situations where they can experiment without endangering humans or the environment. They can learn from a first run-through and try again, making different, and better, choices.
- Games such as "Where in the World is Carmen San Diego?" have engaged many students in exploring geography. While they are fun and entertaining, they also are educational and can keep students' interest alive.

Authoring programs allow teachers and students to combine many components of technology into cohesive, self-made projects or presentations incorporating text, graphs, maps, images and sound. Common authoring programs include HyperCard and HyperStudio for the Macintosh and LinkWay! Live for DOS-based machines. Projects using these programs are limited only by the energy and imagination of both teacher and student. Here are a few examples of how these programs can be used:

- With the aid of authoring programs, it is possible to index film clips, photographs and sound so that they are accessible by a push of a button. These clips can be used to show examples of issues and/or physical and cultural characteristics of regions that are being studied. Imagine the effect of showing one or two short segments of "Lawrence of Arabia" when discussing deserts; "A Passage to India" or "Gorillas in the Mist" when studying India or Rwanda; "Grapes of Wrath" when reviewing push/pull factors of the 1930s Dust Bowl region; and "Cry Freedom" for a glimpse of life under apartheid.
- Traditional songs and music from all over the world can be recorded and indexed. Adding sound to the study of a region helps imprint the information in students' minds. The main advantage of using the computer, as opposed to using slide projectors and tape recorders for the same purpose, is that all the information can be organized, presented, and stored in one place.
- A relatively easy method for building on students' interest and developing their expertise is to make a "template" in HyperCard or LinkWay and ask them to add buttons to illustrate some geographic phenomenon. For example, as a quick way to review landforms, one could make a template with "blanks" for the term, the definition, examples from the world and a sketch. Students could complete the template, then take their diskettes to the multimedia station, look for examples on the laserdiscs and add buttons that link examples of the landforms to their stacks.
- As an alternative to paper-and-pencil maps, students might produce interactive maps on the computer. Young authors can make buttons creating links to navigate from a world projection to a selected continent, and then to the country and finally a

particular city. Once at the desired map level, students use either commercial or self-made base maps on which they label various features (rivers, lakes, mountains, cities and towns, highways) and create pop-up text boxes or other buttons with additional information. Clip art or scanned pictures can be added to illustrate characteristic architecture, land use patterns, weather, etc.

Most students love working on and completing such projects and are frequently willing to spend more time both researching and writing than they do on traditional research projects. It is truly impressive to find kids waiting outside the classroom at 6:30 a.m. or giving up their lunch hour so they can work on their projects. The combination of capabilities and the quality of the final product provides strong incentive for all levels of students — the "at risk" and college bound, ESL and special-education students, those with high grade-point averages and those in danger of failing. The power of creativity is evidenced in how students respond to these authoring programs.

Telecommunications is an exceptionally exciting realm of the technology-equipped geography classroom. By using a modem coupled with telecommunications software, students can access incredible amounts of information, while at the same time become familiar with the "information super-highway" to the future. Note that there are some important factors to consider, including security and copyright issues plus paying on-line and long-distance charges.

Acquiring data from remote sources is one way to use the modem's capabilities, but usually students are more interested in carrying on on-line discussions with people in faraway places. Through electronic mail, classrooms can have international pen pals with whom they can communicate on a daily basis. Also, special arrangements can be made to have "on-line" guests visit the classroom and discuss topics relevant to the class work.

Other ideas for telecommunications include exchanging local information with students in other places. By comparing weather patterns, landforms and vegetation, population data and the like, students can learn more about distant locations as well as about their own communities. National Geographic's KidsNetwork facilitates world-wide student exchanges as well as on-line interviews with experts on many topics. Locally, students from various parts of Colorado can exchange viewpoints about controversial issues. For instance, rural students may have different ideas about water allocation and usage from urban students.

Geographers are increasingly using computers for their work. Many simply use word processing programs and/or databases, but the real value of the applying the power of computers to geographic study lies in the ability of the machine to organize, manipulate, and display geographic information. These applications can be introduced in the pre-collegiate classroom.

As mentioned earlier, computer cartography is one fundamental application in which students can use the computer to do "real" geography. From simple line maps to more extensive choropleth maps, students can use graphics packages to illustrate spatial concepts and distributions. By doing projects as these, students will truly become young geographers in training.

For more advanced computer applications, teachers may want to explore the possibility of using GIS in the classroom. In recent years, the GIS industry has made the effort to cater to the general public by developing "user friendly" programs that are considerably more accessible than their earlier, more complicated packages. One example of this is the ArcView program developed by ESRI, Inc. This program has amazing teaching potential, and is a perfect

One Teacher Speaks on Software...

I previously prioritized hardware preferences for my classroom. Now what software to add? Each of the computers in my mini-lab has an integrated "works" program (with word processor, spreadsheet, database and simple graphics program), an atlas program and an authoring program (HyperCard or LinkWay). One or two of the computers have a desktop publishing program, and one or two have a more sophisticated graphics program. All include a mix of simulations, which are rotated on the hard drives to correlate with curriculum needs at the time.

When thinking about which computers and/or peripherals to buy, it's wise to think about how they'll be used and what software will be needed. Having a CD player does no good without CDs, and a laserdisc player serves no purpose without laserdiscs. Students today are part of the "media generation," accustomed to MTV and sound bytes. They are tuned in to music and computer animation, loud sounds and graphic images. Taking advantage of and building on their interests, I try to stress certain points of a lesson by showing film clips from various discs and music from my personal collection which relate to and enhance the issue or region we're studying. Authoring programs make it easy to access clips of movies and make it possible to play a single song from a soundtrack or album.

In addition to these "home-made" resources, there are a wealth of professional packages available to teach a variety of issues on all regions. The GIGI project (Geographic Inquiry into Global Issues) is an example of a complete package that includes print, CD and laser resources plus student maps and teacher transparencies. Topics cover a multitude of issues for all regions of the world, and each unit makes connections to parallel issues in other regions. Professionals with access to much greater film and sound clips have made resources designed specifically for particular lessons. These products tend to be expensive, but are well worth previewing and investing in if they seem appropriate.

introduction to the world of GIS.

While the potential for using GIS in the classroom is tremendous, the drawback may be that these programs generally take relatively powerful machines to make them run efficiently. However, if power is not a problem, introducing "real" GIS to young students is a wonderful way to illuminate the exciting and diverse field of geography.

Conclusion

Is using technology worth it? The technology is here to stay, and we believe that using it will ensure active, interested and engaged students. Technology can enhance their understanding of geography, and provide them with opportunities to complete "real" geography projects by experiencing "real" geography tools.

Unfortunately, not all school districts have the ability to invest in creating classrooms fit for the next century. While some are fortunate enough to have an abundance of equipment and teaching materials, others are lucky if they have one computer for each school and enough books to go around. Whatever the resources of a school, teachers can enhance student learning by adding at least some component of technology to their lessons.

There may be occasions when the teacher feels intimidated by the technology or feels ill-prepared to use the tools. If this is true for you, why not consider putting the technology in the hands of the students? Ask a couple of them to learn the software and teach the class to use it. This is a powerful model that puts students in the role of teachers, and teachers in the role of learners.

Yes, we believe there are many reasons to acquire and use technology with your students. Go for it, have fun, and good luck!

Sophia Emmanouilides Linn is an educational consultant and graduate student at the University of Colorado. Ginny Jones is a social studies teacher at Skyline High School in the St. Vrain Valley School District, Longmont, Colorado.

Stimulating Parent Support and Involvement

By Kathy Near and Kathy Tossava

Successful teachers understand the valuable role parents and guardians play in their child's education, and they continuously seek opportunities to build strong partnerships with them. Families need to be encouraged to participate in school activities. Family involvement creates a sense of community between the student's school and home, as well as a mutual interest in the child's education.

Why Geography?

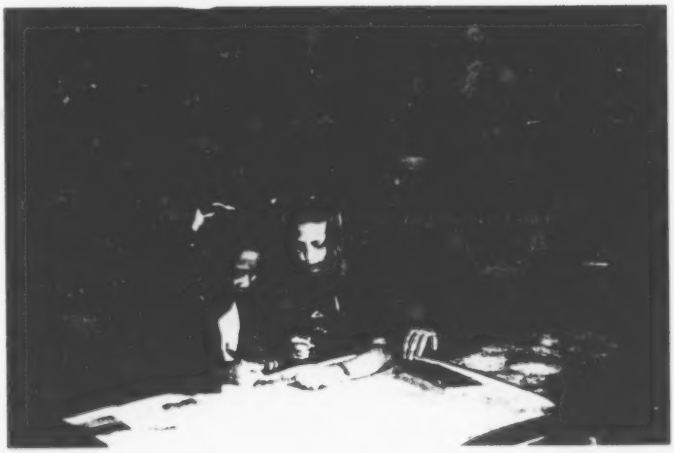
The creation of the geography standards has effectively put geography back into the school curriculum. The schools have an obligation to inform parents of the vital importance geography plays in their child's education and future. Gilbert Grosvenor, president of the National Geographic Society, has made four key points on the importance of geography education.

- As America's economic well-being is increasingly dependent upon the ability to compete successfully in a global marketplace, a geographically literate workforce is more critical than ever before.
- As our nation and the world face increasing environmental pressures, the geographic perspective offers a critically needed understanding of the relationships between human activity and the condition of our planet.
- The credibility of our nation's leaders in the conduct of foreign policy hinges in large measure upon the support of a geographically informed public.
- Because geography is visual and immediate in nature, it is a subject which, when well taught, can ignite a love of learning in our children.

Curriculum Planning

Active family involvement is one method of gaining support for geographic education. Teachers need to seek to involve parents actively and creatively in every aspect of the educational process, including curriculum planning. Here are some ways to include parents:

- Parent participation in a district curriculum review committee
- Parent involvement in the development of building educational goals
- Addressing parents' questions and concerns on the curriculum by explaining its philosophy and goals
- Broadening parents' awareness of the



geography standards and their school's curriculum

- Exposing parents to educational materials that are available for home and school use

Welcome Parent Involvement

Cultivating family interest in education is vital to the success of a strong geography program. Teachers need to develop ways to share the school's objectives and expectations for students, as well as group and individual assignments. Encouraging parents to become involved in their child's education can be accomplished in the following ways:

- Take the time to talk to parents when they are at school.
- Assign parents specific functions, such as helping with a class project, and create greater opportunities for parent/student interaction. Post a sign-up sheet for specific activities requiring parent involvement.
- Communicate with parents by sending messages and letters from students on current activities and lessons, or sending newsletters describing what is going on at school.
- Survey parents on interest areas.
- Encourage parents to visit classrooms.
- Let parents know their child is important, and thank parents for making the effort to stay involved.

How Parents Can Get Involved

Parental involvement includes the classroom, home and community. By creating lessons in which students actively participate, teachers are also focusing on lessons that facilitate parent involvement. Lessons should focus on real-life issues that are current and/or historical. Parents often have expertise in relevant areas and are willing to share their knowledge with students. Here are some suggested activities for strengthening the family-school connection:

- Home projects that encourage parents to help their child with the completion of a task.
- Student-led interviews for families on heritage, immigration, favorite family folk tale, family history, family migration patterns and family tree.
- Simulations in which students and parents interact to create or re-create current and/or historical issues, or lessons that involve patents with specific skills as facilitators of small groups.
- Special programs and activities that encourage family involvement (such as geography fairs, geography bees or a Geography Awareness Week) and the sharing of travel experiences of cultural backgrounds.
- Student demonstration of geographic knowledge through computers, and videotaping of student participation in projects.

Parents As Teachers

Students need to be given the opportunity to explore their interests and aptitudes in geography. Often, classroom teachers do not have the time to provide special activities that allow for this exploration. Giving parents the opportunity to work

with a small group of students can prove beneficial for all involved. When parents come into the school to teach, they bring with them enthusiasm and a fresh outlook. This conveys to students and other parents the importance of education and encourages other parents to become involved.

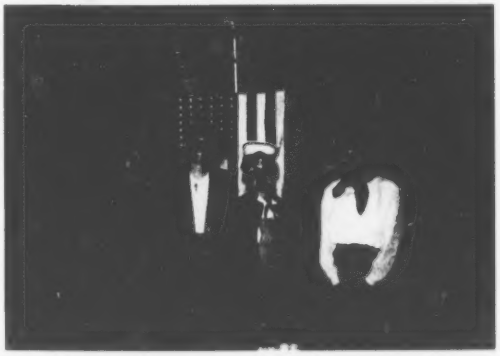
Home Activities

The greatest influence parents can have on their child's development is to become involved in their education. Teachers should promote parent involvement by providing meaningful lessons that encourage parents to become the teachers. As teachers, we need to give parents the tools that will enable them to successfully enrich and broaden their child's education in the home atmosphere.

The Michigan Geographic Alliance and the National Geographic Society have written a program called the The Family Geography Challenge. The program was designed to increase the amount of time spent on geography and engage students in making real-world connections. The 10-week program involves the family watching the news once a week and choosing a major news story to discuss. The family locates places on a world map and uses the Five Themes of Geography to help them understand world events. (This program will be offered to Colorado school districts during the 1995-96 school year. Further information may be obtained by calling the Michigan Geographic Alliance at (517) 774-3723. (See section entitled "Colorado Family Geography Challenge" at the end of this chapter.)

Here are some other suggested home activities:

- Use maps to help plan a family trip or vacation.
- Use a map to follow a favorite sports team as it travels to games in other cities.
- Map the various places the family has traveled and lived, as well as the places where grandparents and other relatives live.



- Take walks in the neighborhood, and describe and discuss ways to get from home to a variety of locations within the community.
- Use a bus schedule or city map to plan a trip from home to another point of interest.
- Explain how job opportunities in different regions of the United States are related to world trade.

Educating Parents

Schools need to take advantage of the many opportunities to educate parents. Time must be devoted to educating parents so that they can become more geographically literate and in turn help their child to understand the importance of geography.

Here are some suggested educational opportunities for parents:

- Hold a Learning Fair. Invite companies to exhibit their geographical games, software, literature, maps and globes etc. Encourage parents to attend to learn about materials that are available for home use.
- Invite guest speakers to discuss the importance of geography in world issues, weather, environmental issues, local issues, foreign policy etc.
- Conduct mini-workshops in geography for parents in order to provide them

with ideas, activities and materials that can be used at home, and to broaden their geographic skills, knowledge and perspectives.

- Videotape the parent education programs in your school to provide an opportunity for those who cannot attend, to benefit from your program.

Parents are the greatest untapped resource our schools have. It is up to the schools and the teachers to create an atmosphere that encourages their involvement. Parental involvement is vital to the success of our schools, and to preparing our students for the future.

Kathy Near and Kathy Tossava are middle school teachers in Adams #50 School District in Westminster, Colorado.

Colorado Family Geography Challenge

Parents and children are welcomed together to after school Family Geography Challenge workshops. Initiated by Michael Libbee, a coordinator of the Michigan Geographic Alliance, the Family Geography Challenge encourages the idea that some of the most outstanding learning happens at home.

Six years ago, the Michigan Alliance developed strategies for getting parents more involved in their children's education. The program is designed to offer parents and students workshops which stimulate discovery learning and are supplemented by free National Geographic maps used in tandem with the news. Parents and children agree to watch TV newscasts or read newspapers together and discuss news items from a geography perspective. Colorado has expanded the earlier design of framing the weekly workshops only on the five geography themes to currently including more standards-based content.

Colleen Faust, an elementary teacher from Warder Elementary, piloted the first Colorado Family Geography Challenge workshop during Spring 1995. The activities built around the standards were incorporated into 8 sessions, continuing to highlight a content driven, lecture-free format using diaries and supplemental enrichment activities.

A few examples of activities include:

- **Standard 1 —** Finding similarities and differences between how continents look on a globe as compared to a map.
- **Standard 2 —** Locating ecosystems on a map. Determining whether there are oceans, rivers, or mountains near the ecosystem that may effect climate, flora, and fauna that live in the area.
- **Standard 3 —** Using waxed paper, a plastic page protector, plastic wrap and three different colored markers, trace the copies of rivers, railroads, and roads that follow. Then lay the different copies upon the outline map of Colorado with mountains all at the same time to answer this question: How did the geography of the land initially affect the transportation routes of the states

Using the Local Community: Field Studies vs. Field Trips

By Nancy Morlock-Hollins and Marsha Spanswick

One of the strengths of geography is that it lends itself to learning outside of the classroom. Traditionally, our curriculum explores people and places exclusively through the textbook. Standards require us to provide experiences that allow students to understand not just the "what" and "where" but also the "how" and "why" of geography. The traditional field trip/textbook approach ignores the rich possibilities available in your local community that make geography come alive for students. Students will remember what they experience first-hand far longer than what they read.

Field Studies

- Students interact with their environment through specific tasks.
- Students have a clear picture of what they are expected to learn through the use of designed activities and rubrics.
- The teacher has control of the goals, objectives and standards associated with the experience.
- Assessment is an integral part of the experience and is aligned with the goals, objectives and standards.

Field Trips

- Students passively observe their environment.
- The expectations for learning are not clear to students, and may elude them entirely.
- The goals, objectives and standards are controlled by outside resources.
- Assessment isn't necessarily structured into the experience.

Structuring a Field Study

First, identify your goals, objectives and standards. There will be times when you identify the goals and objectives of the experience and then align them to the standards, and there will be times when you choose a standard and then create the goals and objectives of the experience.

Take time to experience the field study yourself. This will help you create open-ended tasks and real-world assessments aligned with your goals, objectives and standards. Activities before and after the experience allow students to prepare for and reflect on the field study, and worksheets that ask students to identify what they see and make higher-level connections create a rich learning experience for students.

Assessment is an important piece of this process. When this piece is missing, it leaves attainment of stated goals to chance. Experience just for experience sake can be powerful but it may never be integrated into any broader learnings or understandings.

Tap into your community resources and encourage parental involvement. Divide your students into smaller groups and allow parents the opportunity to facilitate the experience. You will find that they are more receptive to facilitating a rich learning experience than simply chaperoning a field trip.

Nancy Morlock-Hollins and Marsha Spanswick are teachers at Emerson Junior High School, El Paso #11 School District, Colorado Springs.

Observation Checklist

Field Observations

Direct Observations

- Natural landscape features
  - **Visible** — landforms
  - **Nonvisible** — atmospheric temperatures
- Cultural landscape features
  - **Visible** — buildings
  - **Nonvisible** — urban noises
- Human activities
  - **Visible** — pedestrian traffic
  - **Nonvisible** — individual perceptions

Field Observation Matrix

	Natural landscape	**Cultural landscape**	**Human landscape**
Visible (V)	landforms rivers vegetation	buildings roads land use	pedestrians shopping traffic patterns
Nonvisible (N)	temperatures humidity barometric pressure	urban noises ozone pollution odors	perceptions preferences attitudes

Indirect Observations

- Instruments
  - cameras
  - remote sensors
  - tape recorders
  - questionnaires
- Stored data
  - diaries
  - newspapers
  - maps
  - archival data

Geography Standards, Instruction and Competencies for the World of Work

By Dr. A. David Hill

Many of the competencies needed by students for the future world of work can best be learned in the context of geography instruction that is standards-based and inquiry- and issues-oriented. Students must see that what goes on in their classrooms is directly linked to what goes on in the real world. They must realize that learning will be the most important thing they will do after schooling — that learning is the essential ingredient of the world of work today and especially in the future. This is the position taken by the U.S. Secretary of Labor's Commission on Achieving Necessary Skills (SCANS):

> ***"The task of learning is the real work of today, whether at school, in the university, on the job, or in the White House. It is this task young people must master in every environment (SCANS 1991, 5)."***

Education has been the cornerstone of democratic societies. In the United States, for example, public education has been the avenue to equal opportunity. American education promised that all graduates would be prepared to take their place in society. For the past century, this was an industrial society in which the majority of people took their places in fields and factories and shops as skilled or unskilled workers. In public schools, young people learned basic skills — reading, writing, and arithmetic — and they learned rudiments of the arts, humanities and sciences for personal fulfillment and citizenship. Some learned basic occupational skills in vocational education. General, not vocational, education was the platform from which a minority of the population went on to college to become professionals.

That picture of the traditional roles and relationships of education in society is no longer valid. In this post-industrial society and global economy, traditional industrial jobs in home communities are quickly disappearing, sometimes going to low-wage workers in developing countries, but more often being eliminated entirely by restructuring. As the Australian Government's White Paper on Employment and Growth said: "We are not going to return to a world where large numbers of full-time jobs are available for unskilled young workers" (Australian Government 1994, 13).

Peter Drucker, the noted economist, has described ours as an age of social transformation to a society based on "knowledge work" and "knowledge workers." He observed that this will be the first society in which ordinary people do not earn their daily bread by the sweat of their brow. It is the first society in which everybody does the same work, as was the case when the huge majority were farmers or, as seemed likely only 35 years ago, were going to be machine operators (Drucker 1994).

This enormous social transformation affects the roles and relationships of education in society, and obviously increases the social importance of schooling. The new world of work demands a new kind of education, one that is both different from and more rigorous than the old forms of education.

Two interrelated trends that will affect geography education in the future are globalization and accountability. The trend toward globalization refers both to the growing economic interdependence of

countries and to peoples' increasing perception of one world. Unfortunately, interdependence does not mean equity — indeed, the gap between rich and poor increases. In any event, the trend toward globalization is caused by the rapidity of changes in transportation and communication. These changes create the global economy and thus the demand for changes in the world of work mentioned above. These demands put pressure on the academy — the schools, colleges, and universities — to prepare students for this new world of work.

SCANS Competencies

After carefully assessing the emerging patterns of the world of work, the SCANS group in the U.S. defined five competencies that are especially important for work success in the future. These competencies are generic, i.e., they are needed in all types and levels of work. They do not require technical expertise, i.e., computer programming or DNA testing, but they are at least as important as technical expertise. They are essential for effective participation in the emerging patterns of work and work organization. They focus on the capacity to apply knowledge and skills in an integrated way to work situations.

Here are the five SCANS competencies:

1. **Resources:** The competency to identify, organize, plan and allocate resources. The types of resources mentioned by SCANS are time, money, material and facilities, and human resources.
2. **Interpersonal:** The competency to work with others. This includes participating as a member of a team and contributing to group effort, teaching new skills to others, serving clients and customers, exercising leadership, negotiating, and working well with men and women from diverse backgrounds.
3. **Information:** The competency to acquire and use information. This involves evaluating, organizing, maintaining, interpreting and communicating information, which includes using computers to process information.
4. **Systems:** The competency to understand complex interrelationships. This means understanding systems, and knowing how social, organizational and technological systems work. This also means operating effectively with systems, including monitoring and correcting their performance and improving and designing them.
5. **Technology:** The competency to work with a variety of technologies. This includes selecting and applying technologies and maintaining and troubleshooting equipment.

SCANS (1991,11) asserted that the acquisition of these competencies must begin in schools and be refined through on-the-job experience and further training. Obviously, these five competencies do not constitute the entire set of educational outcomes. Core subject knowledge is critical, and in fact, acquisition of subject-matter knowledge and the five competencies depends upon the development of a three-part foundation of (1) basic skills (reading, writing, etc.); (2) thinking skills (decision making, problem solving, etc.); and (3) personal qualities (responsibility, honesty, etc.).

Acquiring Competencies

Addressing the issue of how schools can help students acquire the competencies, SCANS stated that "...the know-how we have defined can be incorporated in the five core subjects" (1991, 19). In the U.S., Goals 2000 defines geography as one of those subjects. But, according to SCANS (1992, 41), these subjects must be taught and learned in a particular way.

"...the most effective way of teaching skills is "in context." This means learning content while solving realistic problems. Teaching in context requires more complex

integration with real-world experience. It also often requires cooperative learning opportunities (e.g., peer teaching and group problem solving). It always demands that students be active learners — that is, workers — who are promoting the growth of their own knowledge as they undertake realistic task..."

Geography education has the potential to make a major contribution to the acquisition of the SCANS competencies. This can be realized if geography education is based on: (1) standards; (2) issues; and (3) inquiry. Standards establish clear expectations of what students must know and be able to do; they address the issue of accountability. The issues-based curriculum provides the real-world problems students must address in order to realize that what they are learning in school is directly tied to the real world. And inquiry methods produce the habits of thought and practice that define the competencies required for the world of work.

Issues-Based Geographic Inquiry

Inquiry is essentially the method of science and of good detective work: It poses questions and proposes answers about the real world as it tests its answers with real data. Students do this as they examine real-world issues in the issues-based, inquiry-oriented geography classroom. This is the approach promoted by *ARGUS: Activities and Readings in the Geography of the U.S.* (1994) and *GIGI: Geographic Inquiry into Global Issues* (Hill, Dunn and Klein 1995), new secondary-level geography instructional materials developed under grants from the National Science Foundation. GIGI is based on Slater's (1993) inquiry-activity planning model, in which students examine specific global issues by pursuing answers to geographic questions. They answer these questions by analyzing and evaluating data, using geographic methods and skills. Not only does this "doing geography" approach lead to meaning and understanding, i.e., to generalizations, but it also promotes the development of a critical perspective — the habits of critical and reflective thinking.

Finally, it is what students do in issues-bases geographic inquiry that helps them develop the competencies for the world of work that we have been discussing. For example, there are three SCANS competencies for which students get daily practice as they do issues-based geographic inquiry using the GIGI materials. These are working with others (interpersonal), acquiring and using information (Information), and understanding complex interrelationships (Systems). The other two, Resources and Technology, although they are practiced less frequently in GIGI, are clearly within the scope of issues-based geographic inquiry (SCANS 1993).

Conclusion

Education that is responsive to the future world of work requires a convergence between general and vocational education. This means the teaching of academic subjects, such as geography, must become accountable for a broader set of learning outcomes than has previously been generally recognized. In addition to teaching the knowledge, skills and perspectives of geography, geography education must also share in the responsibility of teaching — in the context of its subject matter — the generic competencies required by the world of work. A geography education that is based on standards, real-world issues and inquiry is well-suited to meet this difficult challenge.

Dr. A. David Hill is a professor of geography at the University of Colorado at Boulder.

Special Populations

Geography Curriculum Frameworks and Special Populations

Classrooms in Colorado are composed of students from a wide variety of backgrounds and cultures, students who speak many different languages, and students who have a range of skills, talents and needs.

How can we make sure that all of these students are successful when we teach using the geography frameworks? Is it possible to establish high standards and, at the same time, provide support for all students to be successful? How do we respond to the concepts of quality and equality simultaneously? One important construct to meet this challenge is that of Opportunities to Learn.

What are Opportunities to Learn?

The concept of Opportunity to Learn guidelines emerged during the national debate on standards and testing. Many educators and politicians felt a need to ensure that as new assessments based on more rigorous and challenging academic standards are developed, all students will have the opportunity to learn what is measured on the assessments in the schools they attend.

The term "opportunity to learn" appears in the Goals 2000: Educate America Act. It refers to "the conditions of teaching and learning necessary for all students to have a fair opportunity to achieve the knowledge and skills described in the voluntary national content standards."

According to Goals 2000, states must develop opportunity to learn standards or strategies, based on factors the state itself wishes to include. This unique mandate provides a vehicle to guide and support teachers and schools so that students have access to the full range of educational opportunities, tailored to meet their educational needs.

What has Colorado Done to Develop Opportunity to Learn Guidelines?

Soon after Colorado passed House Bill 93-1313, mandating standards-based education, a comprehensive plan was developed to provide citizen participation in designing its implementation. One specific group, the Special Population Task Force, was established to work with all the other committees and through all the processes to ensure that students with special needs would be considered at every phase of design. Members of the task force defined special-needs students as "the broad legislative category referring to all students identified as needing special assistance to achieve educational equity."

Twenty-six different special populations were identified, representing an estimated 30-40% of the school population. Clearly, special-needs students are an important consideration in the design of Colorado's standards-based education system.

In the fall of 1994, 17 groups representing the various special-needs populations met for two full days to identify opportunities to learn (OTLs) for each particular population. The 17 groups were:

- Attention Deficit Disorder
- Chapter 1 (Title 1)
- Deaf/Blind
- Deaf/Hearing Impaired
- Gender
- Gifted Individuals
- Language Minority Students
- Learning Disabilities
- Migratory Students

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- Physically Disabled (and 504)
- Prevention Initiatives
- Race
- Significant Cognitive Challenges
- Significant Identifiable Emotional Disturbance
- Speech/Language Needs
- Traumatic Brain Injury
- Visual Disabilities

Each of the groups considered four areas as they developed their OTLs:

- **Essential Learnings:** Those additional learnings necessary for a given special population to maximize their educational growth and development.
- **Classroom Practices:** The broad range of instructional practices and strategies that are employed to assist a given special population of students to learn.
- **Assessment Practices:** The accommodations and adaptations necessary for a students to be able to adequately demonstrate knowledge and skills.
- **Service Options:** Systems of organizing people and materials to supply and deliver educational opportunities, accommodations and supports in order for students of a given population to be successful learners.

Copies of the OTLs for each group are available from the Colorado Department of Education in printed form or online through the State Resource Bank.

How can Opportunity to Learn Guidelines Be Used to Teach Geography in a Real Class?

This chapter explores how Opportunity to Learn guidelines may be used to help plan lessons and activities for diverse groups of students. Suggestions are given for adapting the thematic unit, "Kids' Community Guide," to the special needs of three groups represented in most Colorado classrooms: students with learning disabilities, gifted students and students with limited English proficiency.

What do these groups of students need and how might their unique gifts and challenges impact their meeting the geography standards? The suggested activities and materials do not take much time to prepare or use, and they aren't expensive. While the material is presented here by special population, we believe that all of the suggestions will be easy to use in this one unit and will benefit every student in your classroom.

Opportunities to Learn for Students Who are Gifted/Talented

by Frank Rainey

Considerations Before Starting the Unit

Most classrooms in Colorado will, from time to time, include students who are exceptionally able in one way or another — mathematically, linguistically, interpersonally, creatively and so forth. These students are often called gifted, talented or highly able. While exceptionally able students have learning needs that are similar to many other students, they also have unique learning capabilities that may require teachers to adjust or adapt their instructional programs with regard to level of challenge, pace of instruction, and advanced skill and concept development. As with all exceptional children, gifted students learn best when teachers plan for and make appropriate modifications in learning conditions, processes, activities and instructional support in order to match these students' special learning characteristics and address their essential learning needs.

Because the "Kids' Community Guide" Unit is largely experiential and discovery-oriented in its approach to developing the desired learning standards, the unit requires little modification to make it appropriate for high-ability students. Most high-ability students will find the activities interesting, challenging and open-ended enough to allow full application of their abilities. Nevertheless, the teacher needs be aware of and take into consideration some of the general learning characteristics of gifted students that will likely come into play as the unit unfolds:

1. Gifted students tend to learn very rapidly, and with unusual depth of understanding. Gifted students may not need as much time to complete the structured unit activities as has been allotted. The teacher should anticipate that some students will complete portions of the activities sooner than others. The teacher, therefore, should plan enrichment and extension activities for these students, both in the course of implementing the unit and as a follow-up to it. These enrichment and extension activities should be related to the unit topic, and should either lead toward developing greater conceptual understanding of the learning content, or provide opportunity for the student to develop greater geographic skill. These activities should not simply be more of the same work the student has just completed for the unit.
2. High-ability students tend to learn with unusual insightfulness and/or intuitiveness. They also tend to possess unusual degrees of emotional and social sensitivity. While the unit is intended to help students develop geographic understanding and skills, gifted students will likely derive far more implications from the unit activities than most other students, and may want to explore these implications. For instance, as students begin to appreciate the concept of perceptual regions illustrated through mental mapping, comparing one's own mental map with students from different backgrounds and neighborhoods, and exploring the cultural and social reasons for different perceptions of the same general geographic area, gifted students may become especially interested in and concerned with issues of social justice and injustice, bias and prejudice, and the ramifications of barriers built on perceptions that potentially set people

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apart from one another. In fact, these students may be more interested in these implications than the geographic standards. The teacher should anticipate this response to the unit activities and be prepared to help students engage their insights and sensitivities for further learning and personal growth. For most students, and especially for gifted students, insight and heightened sensitivity are often the "crystallizing experience" that ignite a focused motivation to learn.

3. Gifted young people have the capacity and often the willingness to undertake increasingly more complex and abstract learning. They generally will do so if they have opportunity and sufficient instructional support and encouragement. The teacher should anticipate the need for a number of enrichment and extension opportunities that build on the implications of the learning from the unit, both for expanded learning and applications in geography and social studies and for community-based projects.

The goal should be to encourage gifted students to learn and perform at levels commensurate with their capacity. This does not automatically happen with high-ability students. Teachers must consciously assist these students to develop knowledge and skills essential for them to learn and perform consistently at the highest levels of their capabilities. The "Kids' Community Guide" Unit provides an opportunity to address some of these essential learnings for gifted students:

- Critical and creative thinking skills (CT) and problem-solving strategies (PS), integrated with solid subject-matter content
- Self-directed learning skills (SDL), especially problem-identification and organization skills
- Research strategies (RS) and skills essential for in-depth study (IDS) and advanced learning

As the teacher plans and executes the unit activities, consideration should be given on how to include these essential learnings.

Introducing the Activity

1. Before starting the class discussion, provide students with a copy of the geography standards that will be addressed in this unit of study. Most students will profit from having these standards present throughout the unit so reference can be made to the purpose of the unit and how the learning from the unit relates to the standards. Any other goals of the unit should also be provided and made clear. Critical thinking and production are enhanced when students have clear goals or targets as reference for their efforts (CT, PS). It would also be helpful for orientation and organizational purposes to provide an overview of the entire unit — including the assessment requirements, the elements of the portfolio and the product of the group project — so learners who have a more global orientation will know where the different activities are heading (SDL). The teacher must make sure students know what is expected in keeping the learning log for this unit: the correct format for various types of entries, the types of information, what constitutes adequacy and quality of the entry etc.
2. In the discussion of implications of accurate and inaccurate mental maps, give ample time for discussion. Be prepared for highly able students to suggest implications that may not at first seem to be apparent or readily understandable. It is possible that a gifted student's response might be over the heads of other students. The teacher should validate the response with probing questions, and by asking for clarification and elaboration (CT, RS).
3. As students suggest why different individuals have different mental maps of the same place, record their responses on a chart. Encourage

fluency of ideas (CT). Challenge the students to group the responses under categorical headings (CT, SDL).

Executing the Activity

1. Making a freeform mental map

- Stress accuracy and completeness (SDL, RS, IDS).
- Have students define "perceptual region" based on the discussion. Ask students to define characteristics of perceptual as opposed to non-perceptual regions (CT). Record in log.

2. Sharing the map with a partner

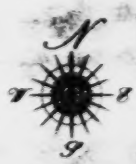
- Make sure the partnership arrangements will contribute to the learning for both students. Gifted students are sometimes ridiculed by less able students because of unusual perceptions; likewise, some gifted students are sometimes intolerant of other students.
- Partners should be matched for what each can contribute to the group activity. It is sometimes wise to pair two very able students for group work. This might be a good time to do so since the sharing involves comparing and contrasting, a critical thinking task. Two high-ability students will likely offer each other appropriate challenge.

3. List and justify

- Be sure students understand what is meant by "places that are important," "places that are exciting," and "in the community." It is possible that gifted students (and others, as well) will count some things as important and exciting (for example, attending music lessons, being part of the local Audubon Society, working on a community service project for Eagle Scouts) that other students would find "uncool" or boring. Similarly, a gifted student may regularly go to the university library in an adjacent community rather than the local public library. This student's sense of community — and hence, his or her personal perceptual map — may be larger than other students'.
- The assumption is that students will use copies of the same local map to plot and code their important places. This might be useful for comparison purposes. The teacher might ask students to think of different ways students' perceptual maps might be compared. While most students will likely look for congruence and non-congruence of topical features of their maps (for example, both show the public library, but one shows the health club while the other shows the community recreation center), a divergent thinker might suggest creating transparencies of the maps so they can be overlaid to graphically show the commonalities and differences in the whole area as well as the discrete features. (CT)
- Interested and able students might be encouraged to do statistical analysis of central tendencies using data collected on the frequency chart. The chart might also include demographic data for each student in order to develop some inferential statistics as well. This data can be compared later when maps are exchanged between schools. (RS, CT)
- The discussion on class patterns and boundaries should generate a lot of learning for all students. Gifted students will likely begin generating many inferences from the maps produced, the interactions with other students and the class data collection. Some of these inferences may uncover unusual sensitivity to societal issues. The teacher should be prepared to help students explore the implications. It might be wise to employ the Socratic discussion method here (CT). This method is similar to the procedure used in Great Books programs.

4. Map exchange between schools

- Again, it might be wise to pair two highly able students from each school.



The interchange between the two would be more challenging for each, with the feedback having potentially greater impact. It isn't necessary that the students know they are being purposefully paired. (CT)

- Some gifted students will probably express concern about how honest they should be with their analysis and feedback on the worksheet from the other school. They may be concerned about hurting a stranger's feelings, or being disrespectful of someone's "important place," or being ethnically or culturally insensitive. The teacher should take these concerns of students seriously and be prepared to deal with them.
- Use descriptive and inferential statistics to analyze data on between-school and whole group bases (RS, CT).

Concluding the Activity

1. Use the Socratic method for discussion. Draw heavily on descriptive data. This discussion is the most important activity of the unit in terms of fixing the learning intended in the geography standards. Adequate time should be spent to ensure that students have developed the desired understanding. Time should also be spent dealing with the implications of the learning.
2. High-ability students will get more out of the on-line communication with their counterpart in the other school, having been paired in the map exchange activity. Their discussion of the between-school comparative data will be more challenging and meaningful for each.

Enrichment/Extension

This is probably the most important opportunity for gifted students in terms of content learning to be gained from the unit. Interested and able students should be encouraged to pursue an enrichment or extension activity or project. However, the stated enrichment activity should be offered as only one of several choices. Some enrichment/extension ideas might include:

- Collect a variety of maps of perceptual regions from various historical periods (for example, a map of the world during medieval times or a map of colonial America from the 17th century). Analyze and discuss what makes these maps of perceptual regions. What is the perspective of the mapmakers that leads to their perceptions?
- Given the geography standards being addressed, how might this knowledge and geographic skill be useful to different professionals, such as historians, explorer/ adventurers, social scientists, cartographers, community planners or law enforcement officers?
- Show how concepts of "turf" are reflected in literature, film and art.
- Are there "neutral zones" in communities that are no one's "turf"? What are the characteristics of neutral zones? What does the existence of neutral zones tell us about people living together in communities? Develop a community map showing neutral zones.
- Are humans territorial? Compare human and animal territoriality. What do your findings suggest? Present your findings.
- Find out more about mental mapping. What roles does mental mapping play in other fields besides geography? Create a display of examples of mental maps that serve a variety of purposes.

Gifted students are sometimes reluctant to get involved in enrichment and extension activities, especially if they see these activities as creating more work on top of other work they must do. However, these higher-level learning opportunities can be made attractive to interested and able students under the following conditions:

- Provide opportunity for a student to do the enrichment/extension activities as an alternative to the standard curriculum

as long as he or she can demonstrate knowledge and skill in the curriculum being replaced.

- Provide instructional support in relation to skills needed to be successful in the undertaking.
- Help students focus the activity and design an individual or small-group project or investigation, including opportunity for teacher review and feedback, presentation considerations and evaluation criteria.
- Communicate to the student that independent, self-directed study and production is important and valued.

Assessment/Individual

Be sure students are aware of the criteria to be used in judging both the extent and quality of their work. Rubrics are very helpful in this regard.

Gifted students should be encouraged to work toward advanced levels of performance. As an incentive to work toward higher levels, the "thought paper" activity might be differentiated. That is, for minimum credit, students could complete the personal-response task as described in the unit plan. For additional credit, students could write an essay explicating the key points of their learning and showing how the learning addresses the geography standards conceptually. A rubric form of assessment could be applied to both tasks.

Group Assessment

Gifted students will likely enjoy this activity so long as they can be heavily involved in the leadership and decision making required. The teacher should be alert to the interpersonal dynamics of group projects such as this. High-ability students may try to take over the project if this is the "only game in town." It might be wise to give students a choice to take part in this activity or to choose one of the enrichment/extension options.

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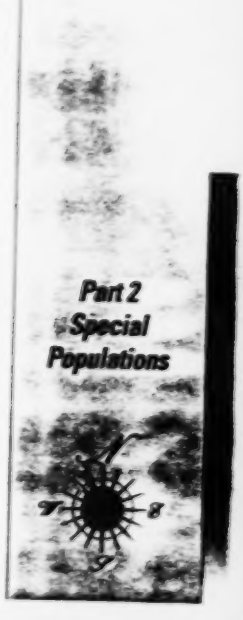

Opportunities to Learn for Students with Learning Disabilities

by Lois Adams

Considerations Before Starting the Unit

Students with learning disabilities are capable of learning and participating, and can be productive, successful students. However, many students with learning disabilities have difficulty understanding the language of instruction and organizing their thoughts and their lives.

As we consider how best to teach the geography standards to students with learning disabilities, three important "essential learning" factors are helpful:

1. Even some of the common language we use in everyday instruction may not be understood by students with learning disabilities. If students don't know the vocabulary related to the content, they have difficulty understanding the concepts being taught. Thus, it is essential for students to understand the language of instruction. For these students to meet the geography standards, we must introduce, use, review and assess the understanding of the essential vocabulary in a systematic manner.
2. Students need to learn how to organize their materials and assignments so they do not become overwhelmed as they participate in the various activities and respond to the myriad demands of their classrooms.
3. Students need help in learning how to learn. One important learning skill that students may not have is the ability to see conceptual patterns. An effective technique is to provide "information organizers" for students to help them structure their ideas and see patterns in what they are learning. The study of geography offers many opportunities to teach conceptual as well as physical organizational strategies.

The "Kids' Community Guide" Unit provides an opportunity to address essential learnings for students with learning disabilities, including effective techniques, strategies and tools to compensate for their learning difficulties; the self-management skills necessary to direct their learning and their lives; and the vocabulary and language skills necessary to learn the content standards.

Several effective classroom practices are particularly important in order for students with learning disabilities to acquire the essential learnings and content standards. There is a need for educators to:

- Present information and directions in various modalities.
- Provide opportunities for active learning.
- Provide "information organizers" prior to and during instruction.
- Teach specific skills necessary to be a successful student.
- Make sure that important terminology and concepts are clear.

Students with learning disabilities benefit from specific ***assessment practices.*** They may perform much better if they are allowed to use word processors and to have more time to complete their tasks. In addition, alternative assessments may allow them to demonstrate what they know by drawing concepts instead of writing them. These suggestions are particularly important if a student's knowledge, not his or her language or cognitive processing disability, is to be assessed.

One particularly effective ***service option*** for students with learning disabilities is to have a general educator and a special educator co-teach a class. Co-teaching occurs when two educators jointly deliver instruction to a group of students, usually in one classroom. The unit described below would provide an excellent opportunity for co-teaching.

Preparing for the Unit

1. Before beginning this unit, it is important to identify the key vocabulary and basic concepts that students must know and be able to use to participate in and learn from the activities. The goal is for students to understand and use the identified words and concepts with ease and accuracy. The following words are ones that may be important and prove difficult for many students, including those with learning disabilities: Mental map, perceptual map, choropleth map, patterns and boundaries, land forms, culture, physical characteristics, recreation, leisure, points of interest and monuments.

   In addition, some students may lack the ability to apply basic map conventions, such as distance scales and typical map symbols for places (airports, hospitals, campsites, gas stations, parks). They may not understand that north is frequently but not always at the top of the map, and that maps should have an indication of directionality.

   Students with language difficulties frequently are frustrated by prepositions. This means even some seventh- and eighth-graders may have a hard time understanding frequently used phrases, such as "east of here," "to the west of the mountains" or "downstream from the park." The results of misunderstanding these phrases may make giving and following directions a hazardous experience!

2. In this unit, there will be several assignments to complete, and students will be expected to compile a portfolio of their work. This will require organization skills that students may not have. Thus, structure and examples will be needed to teach these skills.

3. Finally, this unit asks students to discuss and analyze how individuals, groups and cultures perceive issues and events differently. In order to do this, students must be able to gather and organize information in a compare/contrast organizational pattern. That requires conceptual mental-mapping skills that may be very difficult for many students, including those with learning disabilities.

Introducing the Activity

Students with learning disabilities may need support and instruction in how to organize their materials and assignments. Therefore, after completing the activities described in the introductory phase, it may be helpful to make sure that students have a place to keep their papers and a strategy for completing their portfolios. One way to accomplish this is to require that all students have a three-ring notebook with dividers. Each divider can be labeled with one of the final products for the portfolio, and one divider marked for vocabulary/ concepts. Then as students finish each assignment, it can be filed in the appropriate place. Another option would be to have each student use a manila folder with colored paper between each of the assignments. The colored paper can be labeled with the assignment that follows.

In either case, it will be helpful to have available an overview of the unit, listing each of the assignments, the date they will be due, the amount of points or other evaluation strategy used, and a space to check off the assignment when finished. This sheet (see page F • 3.7) will provide an overview and conceptual organizer for students as well as help them keep track of their progress. It models and teaches

students to use an organizational strategy. Teachers may allow students to help decide how many points each item should be worth and when it should be due, or they may make those decisions ahead of time and have students write in what has already been decided.

In addition, teachers may wish to provide students with an Important Vocabulary/Key Concept page (see page F • 3.8) so they have an easily accessible list to refer to as they complete their work. You may wish to have some or all of the definitions already provided on the sheet or you may want to students to fill them in as the unit progresses. It is also helpful to have a copy made on a transparency so you can refer to key words as you work along.

Next, it will probably be necessary for students to learn, re-learn or review the key terms used in reading and making maps. This may be accomplished by doing the following:

- Provide pairs of students with a map of a town in the state that is fairly well known, such as Aspen, Denver or Colorado Springs. The maps should have examples of key map symbols and conventions on them.
- Review or introduce the important terminology/concepts that students will need to read and make maps. Have students star the important words and concepts and copy the definitions from your transparency (if you haven't provided them on their papers). If these are new terms and concepts, you will need to demonstrate them on a transparency of an actual map. Have students identify an example on their map for each of the key words/ concepts, such as distance scale, typical markers, direction signs, parks. Have students answer questions on an overhead or worksheet designed to guide their thinking as they use the map (for example, What street is just east of X street? What is the most northern street on the map? How many churches do you see on the map?).
- Review with the class what they marked as examples of the key symbols and conventions and how they answered the questions.
- If needed, demonstrate once again on an actual map the important items that should have been identified by using a transparency and pointing out key terms, phrases, concepts. Have students add and correct their own as you go over this.

As part of the introduction, it may be helpful to have students make mental maps of their school. Thus, they move from identifying the key phrases, concepts on another map to producing their own map of a familiar place.

This school map assignment requires students to apply the terms and conventions they used in the above activity on a map they create. This time students may work in groups of four to six. The assignment is to draw a map of the school, using no words, only symbols on the map. They may develop a legend to explain the symbols. Each team is to then decide on a place to hide a "treasure." (Jokes, sage advice, fortunes, candy or funny stickers may be used as treasures. They may be supplied by the teacher or by the students, using books of riddles, jokes, advice etc.)

Students then write clues that can be used by another team in the class to find where the treasure is hidden. Clues may include such verbal instructions as, "Go north until you arrive at the room by the double doors," or "Turn west when you get to the east of the large room to the north of the bathroom." The teams can then trade maps and clues and the other group tries to find the treasure by using the clues and the map. (This may be done completely as a mental activity within the classroom, or with certain restrictions about where treasures are hidden and how the search is to progress, students may actually hide the treasures and go seek them.)

At this point, the school maps can be taped to the wall or bulletin boards and students can circulate around to study them and determine how they differ. Students should make note of which maps contained what kind of information. You can then lead a discussion by asking questions: How did your group decide what to include on your map? In your group, did students who are interested in sports suggest different things for the map than students interested in music or shop? Did girls in your group have different ideas for what to put on the map than boys?

Now, consider what makes maps more or less helpful. You might ask students to consider what things seemed to provide the most helpful information, and what things were confusing? You can write student ideas on a flip chart, board or transparency as students engage in discussion.

Students now have a list of key map conventions and vocabulary to use as they create their mental maps; they have had the opportunity to identify these on other maps and create a group map of a familiar place using the terms and concepts; they have a list of attributes of good maps; and they are ready to develop their own mental map of a place outside of the school.

Executing the Activity

1. Making a freeform mental map

Before you have students begin their own map it may be helpful to emphasize the meaning of a "perceptual" map. Students should write the definition of a perceptual map on their vocabulary sheet. If you write the definition on a transparency and have students copy it, it will make it easier for students with writing difficulties. The important thing for students to understand is that each person's perceptions may be different and that these are formed by the person's unique experiences.

A "trust walk" is one way to help students experience and understand this concept that different people may draw very different perceptual maps. — Have students work in partners. One person is the guide, the other the follower. The followers close their eyes and are blindfolded. Each guide leads each follower around the room, into the hallway (if practical), carefully guiding the person in whatever way is helpful, but using no words. Guides may lead followers to touch various objects, sit, stand, climb over chairs etc. (It's important to emphasize that the goal of this exercise is for the guide to help the follower have a positive, safe experience.) After five minutes or so, the pairs return to their seats, and blindfolds are removed. Each partner draws a map of where they were. The partners compare maps to see how they differ. How does seeing make you notice different things? Do distances appear different to those who see and those who don't? What about heights? After a discussion of these perceptual differences, the teacher can move into making individual maps. (It will be helpful to quickly review what makes maps helpful and to refer students to the sheet with the key map terms and conventions.)

2. Sharing the map with a partner

This assignment requires students to compare and contrast their map with that of a partner, and record conclusions in their log. Students who have language or cognitive difficulties often have a hard time completing compare/contrast activities. Providing a mental concept map may help them gather, organize and report their thoughts.

Information Organizer 2 (see page F • 3.9) provides an example of a conceptual map that may be helpful for this activity. Specific instructions guide students in how to use this kind of map. This information organizer may be used as

the log assignment for students who need external structure to write, or those who need help in organizing their writing.

3. List and justify

In order to complete the assignments in this segment, some students again may benefit from using information organizers. Information Organizer 3 provides an example of a form that may help students collect and record information.

Before leading the discussion on patterns and boundaries, it would be helpful to have students copy the definitions of these words from an overhead transparency as you discuss them and provide examples. Many students would profit from having both specific examples of patterns and boundaries (or the absence of patterns or boundaries).

One type of a pattern that occurs in language is categorization. As students compile lists of favorite places, it would be helpful to have them develop categories for the places they are listing. This will be helpful as they develop the "Kid's Guide" and it is an important language skill that many students need to learn. Some possible patterns by category are places for recreation/leisure, dining, worship, family activities or work. Students may discuss what categories are helpful for them, agree on a list and then go back to their own place lists and identify which categories each of their favorite places fits.

Some students will also need specific instructions in how to use the telephone book. One way to do this is to refer back to the discussion about classification of places to illustrate how the Yellow Pages are set up. A few minutes of demonstration and practice in finding phone numbers in both the white and yellow pages should help many students. Instructions in how to call information may also be needed.

As you continue through this segment, it will also be helpful to write some summary statements from the class discussion about patterns and boundaries on a transparency and have students write those in their logs and then add one or two statements and examples of their own.

4. Map exchange between schools

Students with learning disabilities should be able to complete these assignments with no additional support. However, at this point there may be an opportunity to use the identified key map terms and concepts in a slightly different way to reinforce and assess vocabulary mastery. "Weave-a-story" is a quick and entertaining activity to accomplish this. Here is how it works:

- Divide students into groups of two or three.
- Have each group write a story, weaving in all or a selected number of the identified vocabulary/concept words. The words must be used appropriately in the context of the story. To add interest, you may require the students to make the story they write be about their own class. It's always fun and supportive to learning when the concepts and words are made personal.
- Have one or more of the groups read their stories out loud. They may want to leave the targeted vocabulary words out and have other students fill in the correct word.

These stories may be used as end-of-the-week quizzes; added to students' portfolios; or exchanged with other groups for a quick review at the beginning of future classes.

Concluding the Activity

As students participate in this instructional sequence, it would be helpful for them to use the second part of Information Organizer 3 (see page F • 3.11) to analyze the list of places of their partner from the

other school. By completing that page, students may be prepared to more easily communicate online with the other student. You may suggest that students jot down specific questions for their new friends before they actually get online.

As you lead the discussion about differences between the classes, you may want to encourage students to look at the categories they have developed (recreation/leisure, worship, eating out etc.) to see if there are any differences between the two classes in what types of categories they chose by category.

Assessment/Individual

Many students with learning disabilities have difficulty expressing themselves in written form. Thus, to complete the "thought paper," students should be allowed and encouraged to use all of the information organizers they have filled in to help them. If the paper is to be evaluated and graded for grammar and mechanics, students should be given time for rewriting and editing. If the students are comfortable with a word processor, that may facilitate demonstration of learning and its use should be encouraged.

An alternative to the thought paper assignment may be to have students consider the maps of the student from the other school and the reasons why that person liked to go certain places. Then each student could make a hypothesis about what their partner student is like and, based on that, write a diary of one day's activities for the other student. Using the map provided by the other school, the student could describe one day in the life of his or her student partner; do the same thing for himself or herself; and make observations about how the diaries and maps reflect differences and similarities. For students with artistic skills, the diary may be pictorial rather than written.

In addition to evaluating the actual assignments, students may also be evaluated on the organization and appearance of their portfolio. A checklist such as Information Organizer 4 (see page F • 3.12) may be used and partners can check each other's portfolios and put their evaluation sheet at the front for the teacher to see. This reinforces the habit of completing assignments and keeping materials neat and organized.

Group Assessment

Using the information collected and knowledge developed in this unit students should be in positions to contribute their talents and skills.

Lois Adams, Ph.D., Consultant, Special Education Services Unit, Colorado Department of Education.

Information Organizer 1

Table of Contents
Kids' Community Guide

When we finish this unit each of us will have a portfolio with maps and information about places to go and things to do. Here's what it will contain:

Description of Item	Points	Points earned	Date Due	Date Done
1. Student's mental map.				
2. Log of interactions with partner.				
3. Log of comments on map on map from partner school.				
4. Worksheet and color-coded map.				
5. Hard copy of on-line conversation with person from other school.				
6. Thought paper: • Places I'd like to explore. • Reasons I'd like to go there. • Places my friends like to go. • Reasons they go there. • Places we avoid, and why.				
7. Other assignments.				

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Information Organizer 1A

Key Vocabulary/Concepts

1. mental map
2. perceptual map
3. choropleth map
4. patterns and boundaries
5. land forms
6. culture
7. physical characteristics
8. recreation
9. leisure
10. points of interest
11. monuments
12. distance scales
13. map symbols
14. north of....
15. legend

Information Organizer 2

Compare/Contrast Perceptual Maps

INSTRUCTIONS:

Maps may be different for many reasons: their size, the places identified on the map, the location chosen to draw a map of, the symbols used, and other ways, too.

1. Look at the chart on the next page (chart 2a). In the left circle, list some things that are on your map but not on your friends' maps.

2. In the right circle, list things on your friends' map that are not on yours.

3. In the place where the circles overlap, list things that are on both of your maps.

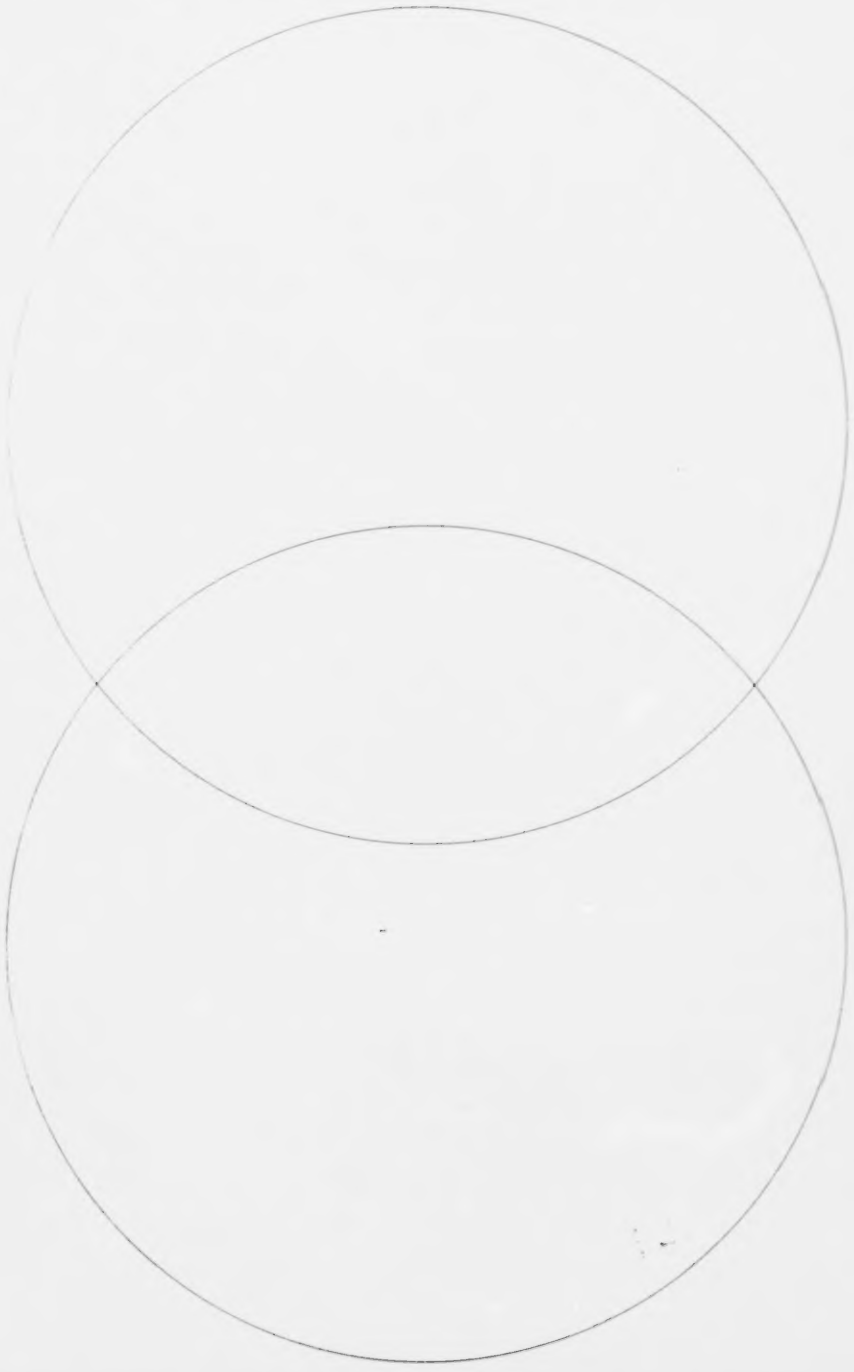
Now, talk to your partner about the differences. Why did you each choose to draw the map you did in the way you did? How is your map different from your partner's?

What things were similar in both maps? Why do you suppose you both had these same features?

As you look at the information in the circles, what can you learn about what is important to you? To your partner?

Information Organizer 2a

Conceptual Map: Compare/Contrast



Information Organizer 3

Important/Exciting Places to Visit

Place _____

Address _____

Phone _____

Reasons

_____

_____

_____

Why I Like It

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

NOW, GET TOGETHER WITH YOUR PARTNER AND COMPARE YOUR TWO LISTS.

1. Write here the places that are on your partner's list that aren't on yours?

2. Read and talk to your partner about the reasons why she/he likes those places. Have them describe them to you if you aren't familiar with them.

3. Put a star beside any of the places you listed in Number 1 that you would like to visit based on what your partner said.

Information Organizer 4

Portfolio Check

How Do You Score?

	Yes (+5 points)	No (0 points)
Stocked		
1. All assignments are in the portfolio If no, number missing:_____		
Clearly labeled		
2. All assignments are clearly labeled with name, date and class		
Organized		
3. Sections of the portfolio are clearly marked		
Retrievable		
4. All papers are in the correct sections		
Enjoyable		
5. Papers and portfolio are clean and in good shape		
TOTAL SCORE:		

Checker's Signature:

Adapted from the Charles County Academic Self-Management Consortium, LD Forum, 17(3).

Opportunities to Learn for Students with Limited English Proficiency

by Leonor Cuervo de Rojas

Considerations Before Starting the Unit

Students with limited English proficiency come to your class full of expectations and anxieties. They want to learn English and want to succeed, but they know that the journey to success can be hard and painful, and sometimes overwhelming. It is not easy to learn to use a new language and adapt to a new culture with new ways and values. Students who have been successful in their countries of origin face the frustration of not being able to prove themselves in their new classes and with their new peers and teachers. Many times, the lack of English language skills and cultural code are equated with a lack of intelligence or an inability to hear and learn.

Some students with limited English proficiency have been in the school system for years but still lack the language proficiencies needed to succeed academically. You will find all levels of language proficiency and literacy among this population. In addition, students may be gifted and talented and/or have disabilities. For these students, as for any other student in your classroom, opportunities to learn must be a reality if we truly believe that education is for all.

Research has shown that a second-language learner needs from five to seven years of good instruction and sound exposure to the new language to be able to compete academically with his or her English monolingual counterparts. Limited English proficient (LEP) students come to your class with another language but with the need to acquire the language skills and knowledge that your English-speaking students already possess. Opportunities to learn provide LEP students with accommodations in the delivery of instruction, use of alternative assessments, use of appropriate language level and grade-level materials and sufficient time allotted for students to reach the standards.

One of the first tasks you have as a content-area instructor is to identify the LEP students in your class and assess their English language skills as well as their knowledge of the content area. Using the native language for the content area assessment, when possible, may give you a better measure.

Working in conjunction with the ESL/Bilingual teacher or tutor will help you understand your LEP students' needs, give you information about language assessments and help facilitate the learning of essential vocabulary and key concepts. You may have a variety of English-language skill levels as well as levels of literacy and knowledge of the content area.

Therefore your teaching strategies must accommodate your students' needs. You must address the language needs of your students even if you are not a Bilingual/ESL specialist. Knowledge about language acquisition, cross-cultural communication and English as a second language (ESL) teaching strategies will be beneficial.

For most of your LEP students, this is a new culture. In addition to learning a new language, they are trying to learn the content and trying to get acquainted with most of the processes their peers already

know. Even though the content might be familiar in their native language, the process of learning in this culture may present unusual challenges for them.

Planning for vocabulary development is essential for all students, but especially for LEP students. It is important that they have an understanding of the vocabulary that will be used in the lesson presentation. If students do not understand the language of instruction, it will be extremely difficult, if not impossible, for LEP students to demonstrate proficiency in the content areas. Since it is possible to have from beginner to advanced levels of English proficiency and literacy in the same class, the teacher needs to make the necessary accommodations to provide LEP students with realistic tasks and expectations for performance and success.

Provide language input through a variety of multisensory modes, such as visual, auditory, association of language with physical actions, and tactile representations. For language acquisition, it is advisable to rely heavily on manipulatives, pictures, audiovisual materials and technology. Presentation of visuals, concrete objects and vocabulary before introducing a chapter, as well as outlining, summarizing and examining text structure are practices that benefit all students, and especially the LEP students who have to deal not only with the new language code and culture but also with the subject matter.

Communicate the objective of the lesson in the language the students understand, using native language whenever possible. Pairing an LEP student with an English-speaking student or a peer of the same language background but a higher level of English contributes to the learning of both students, and facilitates performance and acculturation. Learning to learn, and learning to ask for help and receive help, are essentials for the LEP student.

Help students prepare better by providing learning strategies to organize their material; showing them how to focus their attention on tasks; teaching to higher-level thinking skills; teaching them how to ask questions; and gradually allowing them to become more independent learners.

Preparing for the Unit

Before beginning this unit, engage students in pre-reading exercises, using pictures and multisensory materials, focused on key vocabulary and concepts. While some of the advanced students may not have much of a problem with the vocabulary, the beginning student may need to learn every other word in English. This unit on communities incorporates the use of prepositions, comparative forms and verb tenses as well as map conventions and symbols as a pre-requisite for the success of LEP students. Key words for this geography unit include but aren't limited to: administer, bias, boundaries, choropleth map, collate, culture, land forms, leisure, mental map, monuments, perceptual regions, points of interest, physical characteristics, recreation and support.

The Kids' Community Guide "Word Search" exercise at the end of this section shows the vocabulary that ESL students may need. If students know most of the words, they can have fun just by finding the words and paying attention to their spelling. Beginners may have to look up almost every word in the dictionary (in English and/or in a bilingual dictionary), and get familiar with the spelling and the definitions.

Depending on the students' level of English-language proficiency, you must prioritize the functional language they need to learn, focusing on either the proficiency for social interactions or proficiency for academic success.

The unit asks for students to log and compile a portfolio using organizational

techniques that students may or may not be familiar with. Be sure to show students a few organizer models and an acceptable sample of a log, report, project or portfolio so they have a clear idea of what they are expected to do. Be aware that traditional assessment instruments in English assess both content concepts and language ability. Additional performance standards in the content area may be needed to measure progress of LEP students.

Students are required to be able to use essential geography vocabulary, conventions and concepts, and have conceptual and organizational skills in order to meet the standards identified in this unit. LEP students need additional opportunities and flexible time to acquire the essential learnings in order to actively participate in the activities and be successful. Tasks and evaluations should focus on the understandings and abilities that matter the most, not on what it is easiest to do or test.

Introducing the Activity

Be aware that the community familiar to most of your English-speaking students may be completely new to their LEP peers. It's helpful, once you have presented essential vocabulary, conventions and key concepts, to allow your recently arrived LEP students to work in pairs and map the school campus. Once they finish the assignment, they can present it to the small group (peer may be needed to assist with language performance). Through this interaction, they learn and practice essential language, get familiar with the school surroundings, learn about process and product, and build their confidence. Pairing must be with an English-speaking peer or another from the same native language but a higher level of English.

To learn and review essential vocabulary, conventions and symbols, students may bring maps of their countries to class and compare them with those of their peers. That way, the learnings of the classroom relate to the real world of the LEP students. Comparing and contrasting for the final project may follow naturally.

Another useful activity is to take a tour of the community surrounding the school and have students name and log what they see. Allow students to take pictures of places, especially ones they like or dislike. Be sure to coach the students by calling attention to special-interest places, such as theaters, churches or libraries. Students have to draw a flat map of the community, use vocabulary, conventions and symbols, write about the experience and, when the prints are developed, organize a visual that is representative of that community. Students might also organize a slide show that can be used to present your school community to prospective incoming sixth-graders or to parents and community members. If the activity is well organized, mental maps will be easy after these activities.

Executing the Activity

1. Making a freeform mental map

The term "perceptual map" is an important component of the vocabulary and the diversity that is present in your class. LEP students may have different perceptions of the community depending on their experiences and length of time living in the United States. Be sure to create a tolerant, cooperative classroom that allows LEP students to feel valued and respected; to learn to share ideas; to take risks; to accept and tolerate differences; to learn to give and receive constructive criticism; and to disagree honestly and to work cooperatively.

Once the students feel accepted and respected, performance will improve over time. Their perceptual maps, for this unit, may be an asset to the group as they will depict their cultural diversity. But be aware that cultural differences may give the unaware teacher wrong

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perceptions. For example, in some cultures, to look at the teacher eye to eye is a sign of defiance and to question the teacher shows a lack of respect.

To enhance diversity in your class, you may encourage LEP students to make a cultural presentation about their country of origin. Any item may serve as a vehicle to start the presentation. If language is a barrier, facilitate translations through a peer, language specialist or parent. This is also a good means to familiarize students with the use of "information organizers" to facilitate their tasks. A compare/contrast organizer such as the one presented in this chapter may be helpful.

2. Sharing the map with a partner

This activity may be difficult for some LEP students. Even though the comparing and contrasting may occur mentally, it is a different matter when they want to express their thoughts in English. In some cases, you may have to allow students' partners to assist them with the words they need for the report, and you may want to accept native language with translation from a peer or assistant.

3. List and justify

The lists of places that are important and exciting may take longer for the LEP students to compile. It will be through the interactions with peers and teacher that they gather more information about what is important and exciting in their new culture. Once again, pairing work will benefit the LEP students.

It may also be difficult for LEP students to "report out." In many cultures, students are more used to listening than to speaking, so it will be difficult for them to speak up to the whole class. Other students may not be proficient enough in English to speak before the class. It may be helpful to allow these students to co-present with their partner, use transparencies they can read from, or to present visuals instead of oral reports until they learn enough English to make themselves understood.

4. Map exchange between schools

By this time, students should know some of the needed vocabulary, symbols and conventions, but they may not be comfortable with the accompanying writing. It is necessary that LEP students have extra help with this phase of the project, so they won't feel overwhelmed. A peer or assistant may help students by working with them to identify the places on the map and providing examples and key vocabulary to explain whether they would take a friend there. It may also be necessary to teach students what to do when they need help and how to appropriately ask for it.

Concluding the Activity

After LEP students get their partners' list from the other school, it is a good idea to help them categorize places and to compare/contrast with the help of organizers. It will be interesting for them to find out that the other school also has LEP students and that they can compare and contrast the places they like the most.

Assessment/Individual

It is important to remember that LEP students come at all levels of proficiency and literacy in English and the content areas. Some of them may also be gifted and talented students or be in need of special education services. Whatever their skills or needs, LEP students tend to be assessed more on their English-language ability than on the content material. So it's necessary to provide additional and alternative performances. For this geography unit, students should be encouraged to assess their own progress and to receive feedback from teachers and peers so they can revise and improve their final product. This assistance from the teacher and peers will help LEP students

learn how to learn, and gradually become independent learners.

Group Assessment

For the final phase of the project, that is the design and production of a Kids' Guide to their community, the LEP students will need to be working at ease, will have to learn their essentials, and will have to be able to contribute significantly to the success of the group. In general, additional performance standards in the content area may be necessary to measure progress of LEP students until they are fully proficient in English, and thus held to the same performance standards as native English speakers.

Leonor Cuervo de Rojas, National Origin Project (LAU) Consultant, Colorado Department of Education.

Perspectives

A Teacher's Viewpoint

By Martha Riley

The more I learn about geography and the teaching of geography, the more I realize how much there is to know about it. Geography is truly a dynamic and complex subject. Currently in my 18th year of teaching, both at the middle school and the high school levels, I marvel when I think back to my fledging efforts as a new geography teacher. I always thought I was doing a pretty good job — and I probably was, considering my inexperience, training and resources — but I realize how much better a job I'm doing now. My lessons today are based in solid geographic concepts, (I didn't really know what those were back then), and they connect with each other in powerful ways.

My teaching expertise has recently taken another quantum leap through my participation in the Advanced Summer Geography Institute during the summer of 1994. During this institute, my colleagues and I were trained in the Colorado state geography standards. We then wrote standards-based units of instruction that we could use in our classrooms. That experience helped me understand the value of the geography standards as a guide to what I ought to be teaching. I no longer have to hope that I'm teaching the things kids should know and be able to do. I can look over my lessons and units and align them with the standards to assess and improve my teaching.

My first reaction when I read the standards? "Yikes! These are way too complex. The average person out there won't have any idea what these are all about!" But geography teachers shouldn't be "the average person out there." Now that I've had the opportunity to be trained in the standards and have really begun to use them, I see how rich and how full of potential they are. Geography is not simple; to create simple standards would be a travesty. A teacher who uses them as a foundation is truly teaching good geography.

The key, then, is to provide teachers with training in the standards, and provide ongoing opportunities for them to go through the process of aligning their current units with the standards. As gaps are found, new units can be developed or located that will round out the curriculum.

It's hard work, it takes time and money, but it's exciting and gratifying. And it's worth it.

Martha Riley is a teacher at Eaglecrest High School and is Cherry Creek School District's social studies standards coordinator.

How a Teacher Got Me Interested In and Excited About Geography

By Kristina Schauer

When I first signed up for geography class in my sophomore year of high school, I was absolutely, positively sure I was going to get an A. After all, I had memorized every state on the map in fifth grade, knew where every major mountain range was and could pinpoint the Indian Ocean, Australia and Los Angeles. What more could a teacher ask of me? My attitude was that it would be a mildly challenging and basically boring class in which I would learn little and not even remember much of that. I couldn't imagine it being useful for anything anyway.

I was very wrong about the course. My teacher began by ripping to shreds my preconceptions about what geography is. It isn't only about memorizing maps and knowing where places are, it's also about taking a closer look at various demographic and physical features. Geography doesn't always have to be an image on a two-dimensional piece of paper; it can affect and explain aspects of everyday life. It can be used to answer questions, solve mysteries and make us much more knowledgeable about our surroundings. Most importantly, geography can tell us about who we are as a people, how we change and how that change affects our natural environment.

We began a series of studies on major themes of geography: climate, topography, population and migration. For each of these themes we were required to read and understand basic theories and vocabulary. This provided us with the right tools to analyze what we observe, such as the difference between relief and feet above sea level, or between condensation and precipitation. This information was helpful, everyday knowledge; it was one of the first things that got me interested in the class.

Having mastered thematic concepts and vocabulary, I was ready for the second phase, which was to identify and research a theme in a specific region of the world. I stress the word "world" because we were not limited to any one area of the Earth; that is one of the things that made it so interesting.

One of our first assignments was to make climagraphs of 12 random cities in the world, from Cloncurry, Australia, to Manaus, Brazil, to Las Vegas, U.S.A. My teacher wanted not only to introduce us to the logistics of charts, graphs and maps, but also to give us an idea of the global climate make-up. It wasn't just about how cold Colorado gets in the winter; it was about how the whole planet is affected by rainfall, temperature, wind and ocean current patterns. With migration, we looked specifically at Turkey to try to find out why people emigrate from there to Western Europe. I didn't even know people wanted to leave Turkey, much less why.

Along with studying these different themes, we also memorized nations, rivers, mountain ranges and other physical features on continent maps. We watched videos of wildlife in Southeast Asia, and reports on the migratory situation in Africa. This provided for a diverse range of information and material, and our teacher used many teaching techniques to give us a better feel for the subject. Geography wasn't the boring class I had thought it would be because I could never predict what the agenda was going to be. The variety of activities was incredible; it was

not only intellectually stimulating, but it was really fun.

Although the course focused on world geography, our activities involved local issues as well. I don't think I will ever forget seeing my house in an aerial photograph of the city of Denver. Suddenly I could locate myself in relation to every other place on Earth, and I could actually see how I affected it and how it affects me. The world wasn't just an abstract image that I acknowledged, but didn't comprehend; it was a dominant factor in how I live my everyday life.

This feeling of having a place in the world was enhanced by the population section of the course. We looked at the former U.S.S.R., Mexico, China and the United States, and we were asked to determine where the population is located and more importantly why it is located there. This included looking at several aspects of these four extremely different countries, such as economy, agriculture, climate, topography, vegetation and government. We had to incorporate everything we knew about these places to try to understand something as basic as why people live where they do.

As we were researching it and coming up with our conclusions, I often thought of myself and my own family, and tried to think of why we lived here in Denver. I thought of my large extended family, and why they had migrated so far away from each other. Geography was so personal: I started asking questions about my own life. Why did I like it here? What were the things about Colorado that affect the way I live? I learned a lot about the position of human beings in the world, including my own.

The final project was finding some aspect of society in Denver or the state of Colorado, and explaining it geographically. It was truly a fascinating research project. Topics ranged from comparing AIDS cases and population concentration, to comparing the location of liquor stores and bars to ethnicity. My group chose relating the location of employment agencies in the Denver Metro Area to the ethnicity and income of those areas. We found out that they were not related to either, but rather were located close to where the job markets are. Our findings were not astounding, but they demonstrated to me that you can geographically examine things in your own area, and discover things about the world around you that you were totally unaware of. It was one of the most interesting projects I have ever done in my high school career.

My attitudes and ideas about geography have changed dramatically since my sophomore year. Ever since then, I have been constantly and acutely aware of how geography has helped my academic career and helped me understand current events more clearly. Not only do I know where South Africa is, I can tell you its political history, physical features, where people live and why, and how its inhabitants use the land. There are so many ways in which I use my geographic knowledge, and that is what makes the subject necessary and exciting. My teacher didn't feed us the material; he helped us help ourselves to the wonders of geography. In doing so, he gave me the valuable gift of being able to interpret things geographically, which has greatly increased my knowledge of the world I live in.

Kristina Schauer is a student at East High School in the Denver Public Schools.

A Building Administrator's View of the Standards

By Dr. Tim Heydt

Building administrators, like most teachers, are consistently seeking tools that will help improve the performance of the students. Almost daily they receive notices, pamphlets and advertisements in the mail informing them of the benefits of such and such program. Some are beneficial, but some are a complete waste of time.

The state standards present administrators with a tool that will prove beneficial beyond the classroom. The standards, will cause the parents and student, as well as the teacher, to focus their attention on the district curricula and its objectives. The parents will begin understanding the expectations set for their children and the consequences for the student who meets, or fails to meet the standards. The result will be increased parental support of the teachers efforts, something that has been on the decline for at least 20 years.

Studies repeatedly indicate that successful students receive ongoing support from their parents as they strive to meet high, clearly defined expectations with those of the school! The role of the standards will be to guide the teachers ad the parents as they formulate their expectations and design or revise programs that will assist students to attain those expectations.

The burden of educating the student will gradually begin to shift back to a partnership. This alone will be the largest single selling point for gaining the support of building administrators. The building administrator who seeks ways to improve the performance of the students will welcome the opportunity to gain more team members for this endeavor.

A school can begin the process of incorporating the standards within its programs even before the district initiates the curriculum revision procedures. The teaching staff, including the administrator, can begin by determining which standards, and which of the bullets within each standard, are already included in its programs. They should examine which additional standards are related bullets can be incorporated in the units prior to the district assuming leadership of the effort. They should communicate the current status to the school's accountability/advisory committee, which in turn, can develop a process that will communicate to all parties the changing direction the school has adopted.

In conjunction with this effort, the administrator can utilize the Geography Framework to assist his/her teachers in the implementation of the standards within the classrooms. This framework specifies the concepts that should be taught and offers guidance to the teacher for bringing those concepts into the classroom. It does so in a manner that is truly "user friendly." It offers sample units that highlight the skills and knowledge that align with a particular standard, suggests activities which promote the learning of those skills and knowledge, and recommends authentic assessments that will illustrate the degree to which the students learned the knowledge and skills expected.

A very short inservice is all that is needed to familiarize both administrator and teachers with the Geography Framework. Using the Framework's units prior to receiving direction from the district will allow the school staff to provide valuable

input as that direction is being articulated. Even if that input is not offered, the framework will prepare the teachers for the arrival of that direction.

The Geography Framework can continue to serve the teachers after the district has established the direction. As the district's curriculum will eventually align with the state geography standards, the unit structure and content within the Framework will provide an extensive array of examples form which the staff can develop its own units and lessons. The teachers can, of course, use the Framework's units as they are written.

So, the building administrator is presented with two tools that will assist improving the performance of the students: The state standards and Geography Framework. The utilization of these documents will promote the parent-teacher-student partnership that will result in increased student achievement. The standards highlight the concepts deemed necessary for our children, and the Framework provides sample units that can be used to teach or design additional units that will convey the concepts to the children. This is a winning combination!

Dr. Tim Heydt is the principal of Big Thompson Elementary School in Thompson Vally School District, Loveland, Colorado.

The Perspective of the Local Board of Education

By Patricia Hayes

Goals 2000 is a new kind of federal legislation. Unlike much legislation of the past, which targeted special groups for federal dollars, this law enables states to overhaul their systems for the benefit of all students.

As a participating state in the Goals 2000 project, Colorado is asked to establish clear standards around the national goals and to focus our educational efforts in support of this reform.

The move to a standards-based system presents new challenges and opportunities for local school boards, which operate in an increasingly crowded policy arena. Governors, state legislatures, Goals 2000 panels, special task forces and state education departments seem to be encroaching in areas that just a few years ago local boards had all to themselves. Many local boards are wondering where they fit into this big picture.

Local boards of education have a critical leadership role in the development of standards-based education and a system of assessment that is widely understood and supported by constituents. It is critical that they demonstrate pro-active leadership if they are to remain key players in terms of determining education policy.

While state legislation provides the framework for the important work of establishing standards, the heart of this effort will be, as it should, at the local level. The state standards will be the benchmarks that local districts use as they develop their own standards and curricula. As standards are further developed at the local level through professional and community input, local control will be stronger, and communities will play a greater role in helping to ensure quality education for all children.

The geography standards will go a long way to helping ensure that all students are adequately prepared for the 21st century. But we must make sure that the public understands the value of what we are doing and embraces our effort. State and local policy makers must work together to make sure that educators, parents and community members understand the need for dramatic change, as well as what it will take to improve learning for all students.

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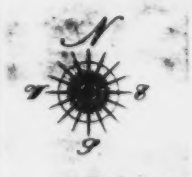
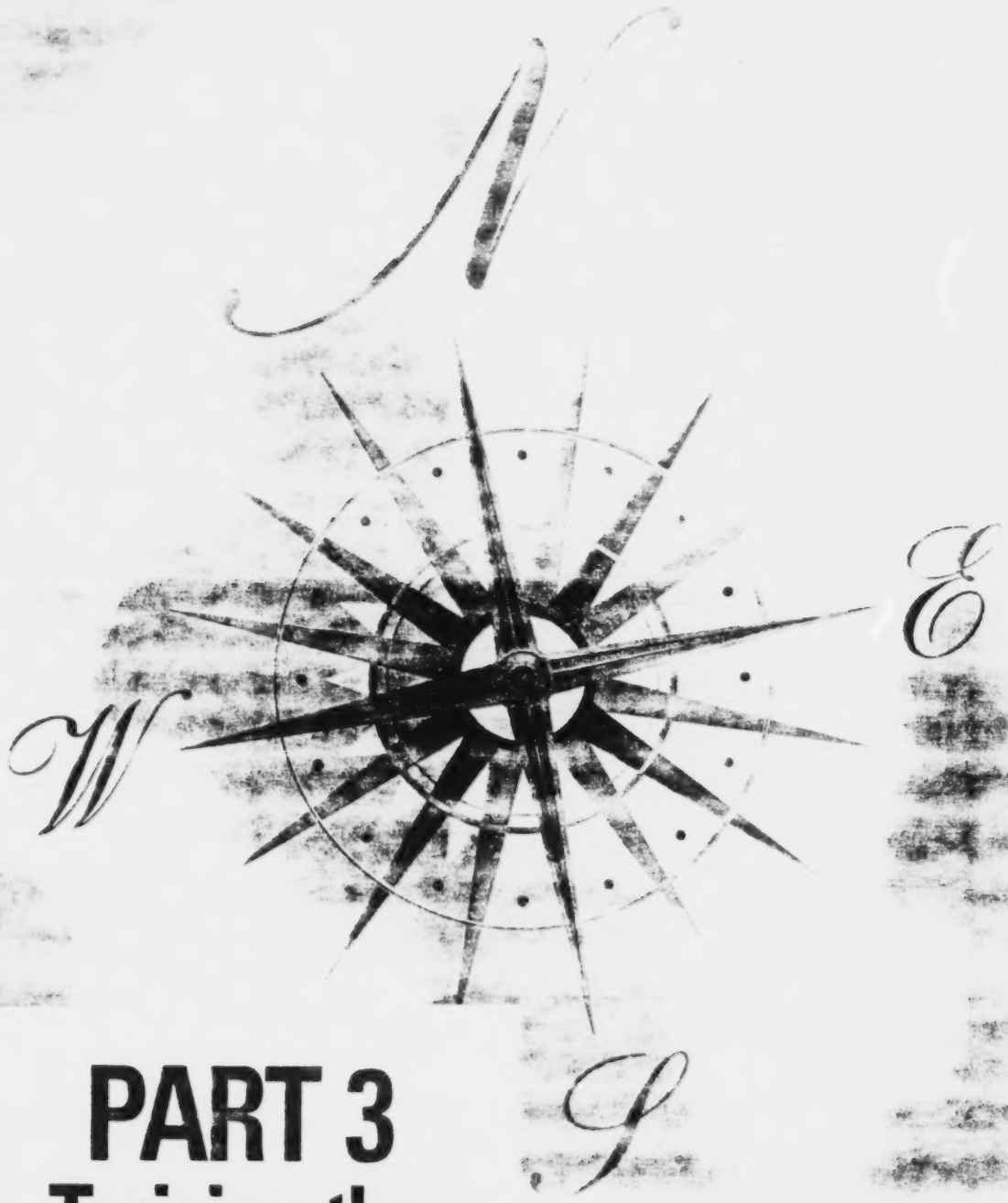


Patricia Hayes is the chairman of the Colorado State Board of Education.



PART 3
Training the Expeditionary Team

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Introduction

Introduction ..... Section A
Training the Expeditionary Team ..... Section B

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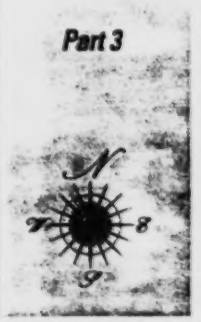

We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.

— T.S. Eliot,
Four Quartets

Much time and effort has been expended on developing the new geography standards, but the subject as experienced by students may remain much the same unless the practice of teaching the standards changes along with the curriculum. We cannot assume that changes in teaching will occur in an evolutionary fashion as teachers adjust to the standards. Teachers, as well as the standards, must be considered as a focus for change. The change process is so full of uncertainty and, unless it is approached systemically, it will come and go almost without a trace.

What we mean by systemically is that this reform must focus on the development and interrelationship of all components of education simultaneously: curriculum, teacher development, teacher licensure and practice. In addition, it means that these changes and must occur at all levels of scale: from the state to the classroom. In order for such systemic reform to occur, there must be maps for educators to refer to for guidance in bringing about change. This chapter is an effort to provide such a map, which will correspond to the real territory that must be covered for effective professional development.

Training the Expeditionary Team

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Training the Expeditionary Team

By Marianne Kenney and Sophia Emmanouilides Linn

The content standards are a powerful call to action. Their clarity and focus set the stage for a wide variety of actions and reform efforts, and demand that teachers be prepared to teach to them. Elementary and secondary teachers often lack the background knowledge in geography that is needed to adequately address the high level of content embodied in the standards. This is perhaps the major stumbling block to implementation of the standards.

Fortunately, over the past 10 years, there has been a national movement towards improving teacher knowledge of geography. Through the National Geographic Alliance Network, teachers have the opportunity to attend intensive institutes that focus on promoting geography education in the classroom. The Colorado Geographic Alliance, a member of the national network, supports inservice training and summer institutes that focus on improving geography education based on the standards.

What Should be Taught in the Geography Classroom?

As a school subject, geography is often misunderstood and misinterpreted. Too often, teachers present it almost exclusively as an exercise in place location. Thus, students leave their geography experience with little understanding of the power of the discipline and how it can help them analyze and interpret the complexity of Earth.

What students should know and be able to do in geography goes far beyond the mastery of hard facts. Geography must be presented as a problem-solving tool with very real practical applications. Students must learn that as an eclectic program of study, it not only has a structure of its own, but it also enhances learning in other fields. It is enriching and enlivening and helps give the humanities and social sciences a relationship to real-world places. The geography content standards are excellent guidelines that summarize the breadth, and depth, of the discipline.

How Can Geography Best be Taught?

The geography classroom of the future may be structured around a methodology that could be revolutionary and disconcerting to teachers. Students will actually "do geography" instead of simply "learn" it. Courses will be driven by the compelling concepts and principles embedded in the content standards. Classes will stress geography skills that encourage students to think speculatively and search for the best answers to problems.

Geography courses will be more expansive. Effective learning will be founded more on the inquiry approach, which encourages students to ask questions and discover answers, rather than simply memorize facts. Geography will become more than a blur of places and names; it will be seen as an integrative discipline that involves students and is relevant to their daily lives. Geography will connect more to the worlds of other subjects: government and economics, science and math, history and art. Students will learn to see the world from a spatial perspective.

How can we train teachers to teach this kind of geography?

Teaching this kind of geography will be a tall order. How can teachers be inspired to share this vision of geographic education? First they must have good, solid grounding in the subject matter and then they must use effective techniques to engage students and present the material. Inservice programs, whether they be one-day workshops or two-week institutes, can help reach teachers and encourage innovative approaches to teaching standards-based geography.

Effective professional development should reflect cutting-edge thinking about content and instruction, as well as honor local control and standards. While professional development programs need to be tailored to district and teacher needs, there are two basic premises that seem to be fundamental components of most effective programs: 1) that classroom teachers and university professors can work together as equals in promoting change; and 2) that classroom teachers can, and should, be trained to be effective trainers of other teachers.

In addition to these, there are a number of other basic principles that are essential to an effective inservice program. Effective programs are:

- well planned with clear purposes
- content-rich and aligned with the standards
- designed to stimulate and engage educators (or the community)
- taught by experienced teachers who have become effective trainers
- conducted according to sound principles for learning new skills

The most important part of professional development programs is that the teachers who participate are engaged in the program and treated with professional respect. The lists below are based on teacher comments in response to inservices.

Positive components of inservices include:

- having teachers and professors working together
- including both content and methods
- being treated as a colleague/equal
- having other teachers serve as mentors
- having the opportunity to discuss issues with other colleagues
- allowing teachers to produce a product that directly relates to their classrooms
- the opportunity for follow-up sessions

Negative aspects of inservices include:

- being talked down to by experts
- one-shot workshops with no follow-up
- "lightweight" workshops without the "meat"
- lack of consistency with the goals of the school or the district
- not being treated as a professional

Training Teachers for Teacher Training

Effective inservices require trained and effective presenters. This may seem like an obvious requirement. However, it has been found that not all teachers who are excellent classroom teachers can also be effective and excellent presenters to their peers. Beyond the content and training acquired in a summer geography institute, an eight-hour inservice or a college credit class, presenters need to have additional practice and training to fine-tune their presentation skills.

A "trainer of trainer" inservice can provide the additional guidance and practice for effective inservices that motivate participants, while providing them with geography content and ready-made classroom lessons. It should also give participants the background for being able to choose and write geography lessons that mesh the standards with their district curriculum.

Teachers are the foundation for educational reform. Ultimately, they are the most important group in implementing the standards in geography. In order for geography education to be more exciting for all students, teachers must be prepared to develop curriculum units that emphasize the standards and connect to other disciplines using hands-on experiences, inquiry learning and problem solving.

The "trainer of trainers" model, and the multiplier effect it creates, is the cornerstone of success of the alliance movement. Consider this: If participants at summer institutes are trained in standards, content, and instruction and they lead three inservice workshops with 20 colleagues on how to develop exciting geography materials in each workshop, they will have reached 60 teachers. If each one of those teachers teaches 25 students, the total number of teachers and students reached will be over 1,500. In addition, they will increase the availability of curriculum units, which will help improve the productivity and effectiveness of geography education and foster positive attitudes about geography standards.

Scales of Inservices

Regardless of the size or length of the inservice, programs can be effective at any scale provided the essential elements are there. Listed below are a few examples of inservice programs at different scales.

District Level

One of the primary objectives for school districts is to train and engage teams of experienced educators to develop curriculum units that support the new geography standards.

Teachers will need training in designing geography curricula that prepare students for the 21st century. District inservices can train teams to use innovative instructional and assessment strategies to create units that correspond to the district standards and emphasize connections between geography and other disciplines.

The State Resource Bank will make exemplary units available to educators across the state. These materials can translate the new standards into everyday classroom practice and assist teachers in developing their own units of instruction.

Teacher workshops are perhaps the most powerful method of dissemination. The Colorado Geography Framework Project uses a "trainer of trainers" model to create a multiplier effect. Participants give workshops to help other educators develop exciting geography curriculum units.

In Colorado, pilot (catalyst) school districts, with a team of about twelve teachers at the elementary, middle and high school levels, will be trained to develop units of instruction driven by the state standards. Each team works with a master geography teacher and a geography professor or graduate student. A group of three to four of these teachers attends the summer institute that focuses on standards and helps with the alignment of district curriculum frameworks to the state standards.

This institute team trains the larger district team of teachers, facilitated by a geographer and a lead teacher working to develop units and to field-test those units in their own classrooms. After this stage, the lead teachers will inservice their staffs and adopt another school district for training, where a trainer of trainers model will be used to create an ever-growing trained pool of teachers.

State Level

In addition to programs at the local level, there are some distinct advantages to having state-level professional development programs. Despite the difficulty in organizing such events, and developing a program that can be useful to teachers from the city as well as from

smaller towns, much can be learned and shared at statewide events. Conferences and summer institutes are two examples of inservice programs that welcome teachers from across the state and familiarize them with what their neighbors are doing, as well as what is happening at the administrative level.

Conferences

Statewide conferences can be a very effective means of disseminating information to a large number of participants in a short period of time. Usually content-based, these conferences serve as a gathering of minds — a place to share information and to gather new ideas.

Unlike the institutes discussed below, conferences require very little commitment on the part of teachers, but can serve a similar function. Many teachers speak of being "revitalized" or "fired-up" after attending a conference. Simply being surrounded by hundreds of other individuals who are dealing with the same pressures or issues can encourage one to persevere and seek creative means of addressing problems back home. Even outside of formal sessions, participants have the chance to mingle, share ideas and make connections with their counterparts across the state.

Conferences are also good places for teachers to practice their presentation techniques. While often there are special presentations and/or keynote speakers, much of the program consists of presentations by one's peers. Whether presenting lesson plans or strategies for implementing the standards, teachers often learn best from one of their own.

Unfortunately, one of the drawbacks of a one- or two-day conference is that there is seldom any follow up for participants. Continuity and follow up support are fundamental rules for effective inservicing. Perhaps there could be a greater effort made toward conference follow up, but this may be unrealistic. Conferences may best be regarded as one-shot, inspirational experiences, ideal places to meet others and appropriate venues for sharing information of statewide significance.

Institutes

Summer institutes serve a unique role in the realm of professional development. They are usually narrow in scope, very intensive and require a relatively high level of commitment from participants. Because institutes usually welcome participants from across the state (or across the country, in some cases), the material presented may or may not directly relate to each participant's school or district goals. It is critical, therefore, that both the faculty and participants spend ample time exploring the relevance of institute material to participants' individual situations.

The major advantage of extended institutes (7-14 days) is that they allow for some diversity and plenty of intensity. Participants can receive training in: advanced content for specific disciplines, teaching strategies, and techniques for writing and evaluating effective lessons or units. They may be exposed to new teaching methods, share in discussion groups and work diligently on researching a new lesson or unit. Guidance is given throughout, by university professors, master teachers or other experienced professionals. Often participation in an institute culminates with one major project that demonstrates what has been learned or achieved during the time spent in residence.

Another major advantage of institutes is that they allow time for proper training of trainers. Through guided practice, participants can develop their skills as presenters by giving their own inservice presentation and being evaluated and supported by their peers. Armed with these new skills, institute participants are expected to return to their home districts

and train others. This is the beginning of the multiplier effect.

Participants must also leave the institute with plans of action that they may implement upon returning home. If they are left with only memories of fun times in the mountains (or wherever the institute was held), all of the work and effort will be lost. While at the institute, they must develop a plan that they can refer to later, that will help guide them and keep focused on their mission. Continued support is vital if these efforts are to be successful.

How Do We Plan For: A Half Day? A Day? A Week? Two Weeks?

Listed in the Sample Section are a number of illustrative schedules of activities that can serve as models when planning for an inservice workshop. Of course, there are infinite possibilities for an effective workshop, but these samples may serve as a starting point for planning activities.

Conclusion

We have outlined a map for you that corresponds well with the professional development territory. Although the need for standards-based reform is national, it must be implemented — and invented — on the local level. Students and communities differ in their needs and resources. Local communities will determine the best route for providing assistance to schools; they will write their own road maps for achieving the standards.

It is essential that communities do more than lay out priorities. They must assist their schools with adequate resources and the necessary support. Teachers cannot bear the burden alone. Determining both the standards and the means to reach them demands unprecedented alliances of students, parents, teachers, administrators and community members.

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- Marran, James. 'Discovering Innovative Curricular Models for School Geography.' *Journal of Geography.* National Council for Geographic Education. January/ February 1994. pp. 7-10.
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Marianne Kenney is a social studies specialist, Colorado Department of Education. Sophia Emmanouilides Linn is an educational consultant and graduate student at the University of Colorado.

Sample Two-Hour Presentation

Goal:

To raise awareness about standards-based education that focuses on geography

Agenda for Two Hours

2 min Comfort Level Continuum with dots

2 min. Welcome and Introductions

15 min. Voting with your feet: have teachers stand in the center of the room, project the questions on an overhead transparency, and have them stand in one of four quadrants of the room marked — agree, disagree, strongly agree, or strongly disagree.

1. "Standards-based Education stresses what students learn rather than what teachers teach."
2. "If students are ever to meet 12th grade standards, their work in the lower grades must occasionally be assessed against those standards." (Grant Wiggins)
3. "All a student needs to know to be geographically informed is the five themes of geography."

10 min. History of the Standards — using transparencies for an overhead projector, give a short background of House Bill 93-1313, how and why the standards were developed, and the paradigm shift in teaching /learning geography

15 min. Video — Part 1/Exploring Geography Standards: discussion of standards by Colorado teachers who graduated from the Summer Institute

10 min. Discussion

15 min. In small groups with chart paper and markers

- What are the benefits of standards for geography education?
- What are your concerns?

15 min. Report out pluses and minuses and post around room

15 min. Distribute a standards-based lesson without the assessment component and brainstorm with teachers on how they would assess it to meet the standards addressed

15 min. What does this mean for you?

- Strategies? Content? Assessment?
- What does this mean for my students/district?
- What will teachers need to implement the standards?
- What can be done to help teachers and others feel comfortable with a redirected focus and frequently unfamiliar material?

1 min. Finish returning to the comfort level continuum. Project on the overhead: "Put Your (blue) dot on the continuum indicating your comfort level with Standards-Based Education" Discuss whether any movement in their comfort with the State Geography Standards and standards-based education has been made. Why or why not?

Some Sample Activities For a Raising Awareness Workshop

Warm-up:

Have a long sheet of computer paper (comfort level continuum) posted in room reading: "My comfort level with Standards-Based Education"

0 _____ 100

As participants enter the room give them two different colored removable adhesive dots (example Avery 3/4" red and blue dots). On the overhead projector:

- "Put a (red) dot on the continuum indicating your comfort level with Standards-Based Education"

This idea was first presented by Corine O'Donnell of the Jefferson County Schools.

Overhead

Components of OLD Geography
• Place-name geography — U.S. emphasis
• Structured on the recall of information
• Fact-based objective testing
• Limited skill development
• Teacher directed/ teacher shaped
• Emphasis on the exotic and different
• Textbook driven
• Minimal problem-solving opportunities
Components of NEW Geography
• Emphasis on spatial relationships, human-environment interaction
• Encourages problem solving
• Connected to critical thinking
• Depth replaces breadth
• Collaborative learning strategies
• Research-based; observation through field work
• Research-based
• Systems-oriented
• Adaptable to new technology
• Themes/Framework/ Standards-Driven

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This idea was provided by Jim Marran, retired social studies department chair, New Trier High School, Winnetka, Illinois.

Overhead

Project state standards on an overhead; give each participant a handout of standards.

Colorado Model Geography Standards

- **Standard 1 — Seeing the World Geographically** — Students know how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.
- **Standard 2 — Regions and Places** — Students know the physical and human characteristics of places, and use this knowledge to define and study regions and their patterns of change.
- **Standard 3 — Physical Processes** — Students understand how physical processes shape Earth's surface patterns and systems.
- **Standard 4 — Human Patterns** — Students understand how economic, political, cultural and social processes interact to shape patterns of human populations, interdependence, cooperation and conflict.
- **Standard 5 — Environment and Society** — Students understand the effects of interactions between human and physical systems and the changes in meaning, use, distribution and importance of resources.
- **Standard 6 — Applying Geography** — Students apply knowledge of people, places and environments to understand the past and present and to plan for the future.

Concerns and Benefits of Standards — If you have more time, divide teachers into small groups with chart paper and markers.

- List concerns and benefits of standards.
- Have group choose top three concerns and benefits.
- Discuss the rankings.

Geography Frameworks Video

What is the main idea the video is communicating?

Please rephrase two ideas in the video that you agree with.

1

2

In order to accommodate a two-hour workshop, the following list of concerns was generated at a regional workshop at Horizon High School, Adams #12 School District. This list could be used by the participants.

Concerns:

Community

- community acceptance

Time, money, staff development

- time, money, resources
- how will all the teachers be trained and receive accurate information to be confident and effective in their classrooms?
- time for teachers to accept this

Evaluation/tests

- standardized tests are a concern
- assessment — who develops?
- the development of appropriate/ effective assessments

Grass roots/local control

- standards must not be imposed top-down
- will I remain a teacher or become a person delivering information?
- how do I implement the standards in my classroom?

Real difference-change? or just a fad?

- My major concern is that standards-based education won't make any difference in the way education operates
- That this **not** turn out to be another fad that we will discard in a few years
- How to overcome "vocabulary" and actually **do it** in the classroom!
- Can we do it the right way! or will it be just more paperwork?

Students-meeting standards: Dumb down and Special students' needs

- How do we deal with the percentage of students who do not meet the standards?
- What about the Special Education and students who have EBD, ADHD, dyslexia, etc. with evaluations?
- How do you explain to parents?
- What will happen to kids who don't meet the standards in all content areas?
- Will education be dumbed down?

Benefits:

- community consensus
- student accountability
- increased student self-esteem from being challenged

- consistency for transfer students
- students learn more conceptually
- the core will be identified
- new, relevant strategies
- gives direction to teachers
- student-focused
- creates citizens who can cope with change
- teacher education revised
- there will be a defined standard of accomplishment

Sample Half-Day Workshop

Goal:

1. To raise awareness about standards-based education that focuses on geography
2. Hands-on demonstrations of standards-based concepts and activities

Agenda

2 min.	Comfort Level Continuum with dots
5 min.	Welcome and Introductions
20 min.	Scavenger Hunt through the standards document and discussion
10 min.	History of the standards
45 min.	"Picture the Standards"
10 min.	Five Fundamental Themes of Geography: An Overview Understanding How the Five Themes Are Integrated into the Six State Standards
15 min.	Part One of Video: Exploring Geography Standards
10 min.	Discussion
15 min.	Break
20 min.	Word Splash - Vocabulary
10 min.	Report out
30 min.	Standards and Curriculum: The Differences
10 min.	Understanding the Criteria for Evaluating an Effective Unit of Instruction
20 min.	Analyzing Exemplary Lessons or a Unit of Instruction: Small group grade-level activity
15 min.	Report out
10 min.	Discussion
20 min.	Part Two of Video: New Pathways in Curriculum
15 min.	"Burning Questions and Issues" — the staff leads a discussion with the participants on issues surrounding the standards.
1 min.	Finish with returning to the comfort level continuum. Project on the overhead: "Put a (blue) dot on the continuum indicating your comfort level with standards-based education." Discuss whether any movement in their comfort with the state geography standards and standards-based education has been made. Why or why not?

Some Sample Activities For a Half-Day Workshop

Picture the Standards

- **Background:** Teachers need a feeling of what the standards say. They need to understand the concepts or they will be taught incorrectly. Not all of us learn by telling, so we will be looking at the standards as a group and present it in some fashion. Further, the teachers will give others an idea and clue so that it will be easier to remember what they are about.
- **Charge:** Using the Colorado State Standards, come up with a representation of the standards that will make the standards clear and memorable without leaving anything out.
- Divide participants into six groups (one for each standard), using chart paper and markers, spend fifteen minutes in small groups "picturing the standards" and 3 minutes to present

  These are the standards they are working toward:

  - Clear
  - Completely understood
  - Memorable

This idea was first developed by Keith Lucero, teacher, Denver Public Schools.

Word Splash — Vocabulary of Standards

On an overhead list terms in all haphazard directions that would give no clue to a proper order:

- content standards
- assessment
- rubric
- articulation
- benchmarks
- curriculum framework

Have teams of teachers develop and present diagrams to show how all these words can work together.

This idea was first presented by Corine O'Donnell, retired teacher, Jefferson Country Schools.

Standards and Curriculum — Discussing the Differences

Standards vs. Curriculum

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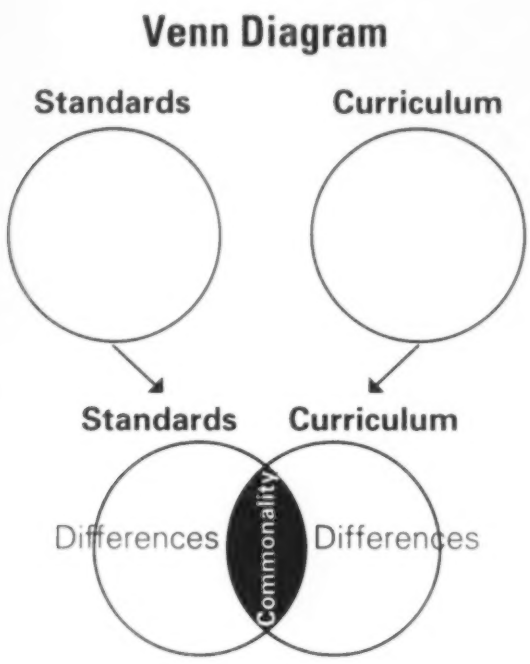
1. break participants into small groups of about six people
2. give each group markers and a sheet of chart paper with a large circle in the center

titled "standards" or "curriculum"

3. *first step:* charge each group to brainstorm words or phrases about all they know either concerning standards or curriculum in the circle on the chart paper,
4. give each group about 10 minutes
5. *next step:* combine standards and curriculum small groups of six, they compare their lists and produce Venn diagrams to show areas of commonality and differences
6. *last step:* have a participant report their finding and discuss in a large group setting



Adapted from an activity offered at a Cognitive Coaching workshop in Jefferson County, Colorado.

Overhead

"Because ALL children can learn at significantly higher levels than are currently required of them, it is the obligation of schools to reflect higher expectations and create conditions where these expectations can be met." House Bill 93-1313

Standards:

- reflect higher expectations
- are based on established standards of mastery
- give way to new assessments that challenge students to think critically, make connections and apply what they learned
- define what students know and are able to do

Standards do not:

- dilute local control

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- address or mandate how to teach
- prescribe curriculum

Building a Curriculum

What are students to learn?

- Standards (knowledge and ability to do)
- Skills
- Perspectives
- Content

How will they learn it?

- Learning opportunities reflecting a variety of teaching styles
- Connections between content, skills and perspectives
- Critical-thinking opportunities
- Apply knowledge or learning to other situations

How will they prove they know and are able to do it?

- Assessments that challenge students
- Allows students to demonstrate mastery of content and skills
- Based on performance

This idea was provided by R. Keith Lucero, teacher, Denver Public Schools.

Sample Two-Day Workshop With a Product on Standards

GOAL:

1. Standards to become clear to the participants
2. Develop a sketch of a unit driven by the standards
3. Produce and present the unit
4. Get feedback from each other

PRE-WORKSHOP

The teachers bring two or three unit ideas — the unit should include:

- Title
- Objectives of the unit
- A description of each lesson in the unit or the paperwork itself for the unit
- A proposed assessment

At check in — they should register their name, grade level, and unit idea(s)

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SAMPLE LETTER FOR WORKSHOP

Dear _____,

Your district curriculum coordinator has selected you to attend a regional workshop on the geography standards at _____. The workshop begins at _____ on _____, and concludes at _____ on _____. This letter describes the program and lists the materials you need to bring.

The workshop — The workshop is an element in a broad strategy to implement the state standards in geography through the use of the Colorado Geography Curriculum Framework. The value of the document depends on its wide distribution and acceptance by teachers. The manner in which the Geography Framework is presented to K-12 teachers is critical to acceptance of the geography standards. Many teachers fear an inundation of ponderous documents for each subject they teach. They envision a stack of dull, wearisome texts that will list new complex teaching requirements, when they should see the excitement and stimulation that a standards-based education can offer their students. Colorado's Geography Framework is, in fact, a useful document that will help them design curriculum and develop exciting learning activities.

Although several early drafts of the standards were widely distributed for review, most teachers are unfamiliar with the document. There is a strong need for districts and the state to provide an interpretation of the standards to their teachers. Ideally, teachers who attend the workshop will serve as consultants to their local districts.

Overview of the program — Attendees of the workshop will explore the content of the Colorado Geography Framework which includes the State Model Content Standards in geography. There will be brief explanatory lectures, intensive discussion, and active participation — hands-on — activities. The intended outcome of the workshop is an understanding of the purposes and uses of the state model content standards in geography, as well as standards in general.

The workshop begins on _____ at _____ with a continental breakfast at which participants will be familiarized with the geography standards. Group and individual work using the Colorado Geography Framework as a reference will prepare unit plans to fit the curriculum guidelines of the teacher's district. Participants will be encourages to incorporate the geographic skills discussed in framework in their own unit plans and lesson strategies.

Kinds of Materials You Should Bring — The major focus of the workshop is the integration of ideas contained in the Colorado Geography Framework into your district approved unit plans. Please bring the following items for use in your work sessions:

- A copy of your district's Curriculum Framework or Curriculum Guidelines, i.e., the document(s) that provides educational philosophy to guide development and explains the sequence of major subject matter goals, concepts, and principles from grade to grade.
- Several different Unit Plans and this can be in any form you have them, such as a collection of lessons and tests rather than formalized district units. Bring any ideas that delineate how curriculum guides goals and content and which cover blocks of instructional time lasting several weeks. The plan should focus on a unifying theme or topic, may provide sample lesson plans, teaching strategies, resource materials, and

may note modifications for special populations, such as gifted, slow learners, or diverse cultures. **The unit plan will be the major emphasis of the workshop.**

Expectations of the Workshop Experience (What you take home, what you will share with others, what you can do when you get home) — Products of your work will be shared with other participants. This will allow each person to return to their district with about forty examples of unit plans that align district and state standards. The unit plans will become the superstructure for the preparation of daily lesson plans. Following your return to your district, we hope that you can share the workshop ideas, products, and experiences with others in your district.

What to Do Before You Come — It would be helpful if you familiarized yourself with the State Model Geography Standards before the workshop. Your do not have to read the entire document, but be familiar with its organization. The workshop will not deal with the history of the development of the standards or why they are important — the importance will become clear as we work through the meeting. Our emphasis is on the use$ of the standards.

Please call me if you have any questions! I look forward to a stimulating workshop and to meeting you on _____.

Sincerely,

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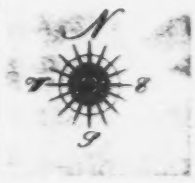
This letter was adapted from a letter sent by Jim Goodman, former Geographer-in-Residence at the National Geographic Society.



Two-Day Standards Workshop Agenda

7:45 Coffee, Registration and Sign-In

Day One

8:00 Introduction and Welcome

8:10 "Standards vs. Curriculum" — in small groups, brainstorm all they know about standards or curriculum , combine standards and curriculum groups, compare and produce Venn diagrams

8:30 Picture the Standards

9:30 Video (Part I) — with discussion

10:00 Break

10:15 Overview of participants charge during two day process is to create a unit of instruction driven by district/state geography standards:

Burning issues:

- What is a unit?
- What is a lesson?
- Assessments (Standards-based)
- Benchmarks

10:30 Hands-on involvement by the participants in sample unit developed by the presenter

11:00 Explanation of how sample unit evolved — problems & solutions (from standards addressed — lessons to assessment showing linkages)

11:15 Analyze sample grade level units using criteria sheet

12:00 Lunch

1:00 Structured work time (Staff floats around for questions/support)

- take unit ideas & look at "planning quadrant" on inservice sheet
- analyze units in light of standards (share with participants)

1:30 Unstructured work time

3:30 Closure (Sometime in afternoon get feedback from staff members; check-in with participants; turn in check sheets before leaving).

Day 2

7:45 Coffee, rolls

8:00 Video (Part II) — with discussion

8:30 Break into grade level groups

- update on progress, help needed, problem resolutions

9:00 Structured Work Time

- get feedback from staff
- get feedback sheet (or check sheet) back
- in group of 4 or 5 have people present to each other and provide feedback—

9:45 Unstructured work time

- completion of unit work; touch base with teacher leaders

12:00 Lunch

1:00 Presenters put unit on chart paper

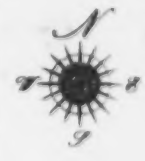
1:30 Presentations

3:00 Parameters of project & final instructions

3:15 Door prizes

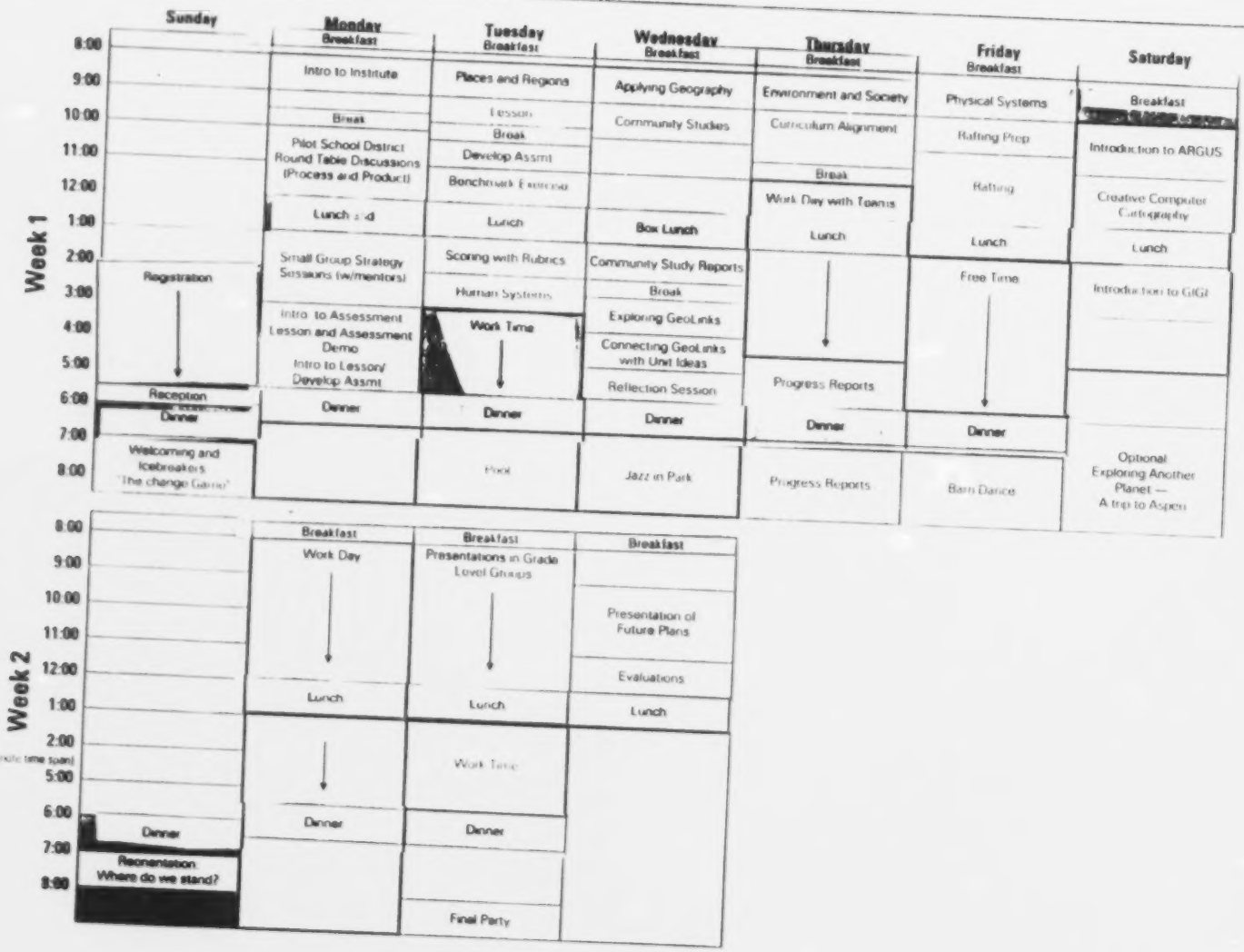
3:30 Closure

- what's available through COGA
- database information for networking (list name,phone #, unit idea, grade level, school)



Sample

Colorado Advanced Summer Geography Institute: June 19-29, 1994



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Professional Development Workshop Checklist

Preplanning

- ☐ seek administrative support
- ☐ arrange financial support
- ☐ select dates
- ☐ investigate sites
- ☐ send out flyers

Site arrangements

- ☐ reserve space, breakout space
- ☐ make audio-visual arrangements
- ☐ arrange for refreshments

Planning Meeting

- ☐ arrange planning meeting
- ☐ make travel arrangements for leaders
- ☐ make lodging and food arrangements for leaders, send maps
- ☐ plan agenda for planning meeting, send to leaders
- ☐ decide resource materials to purchase

Materials for Meeting

- ☐ nametags (leave some blank)
- ☐ folders for handouts
- ☐ evaluation sheets
- ☐ copies of agenda
- ☐ extra magic markers, pens,
- ☐ overhead transparencies
- ☐ sign in sheet

Set Up at Site

- ☐ set up tables, chairs
- ☐ set out materials, handouts
- ☐ check all AV equipment
- ☐ check food arrangements

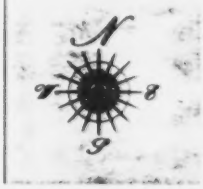
At In-service

- ☐ greet participants
- ☐ put signs out indicating room locations

Follow-up

- ☐ send out thank you notes
- ☐ pay honoraria, travel, meal expenses
- ☐ send evaluation sheets to leaders

Adapted from checklist developed by National Council for History Education in Building A Colloquium for History Educators. 1994.



PART 4
Developing and Sharing New Resources

Introduction ..... Section A
The Standards and Assessment Resource Bank ..... Section B
Colorado Geographic Alliance ..... Section C

Introduction

The world is but canvas
to our imaginations.

— Henry David Thoreau,
A Week on the Concord and Merrimack Rivers

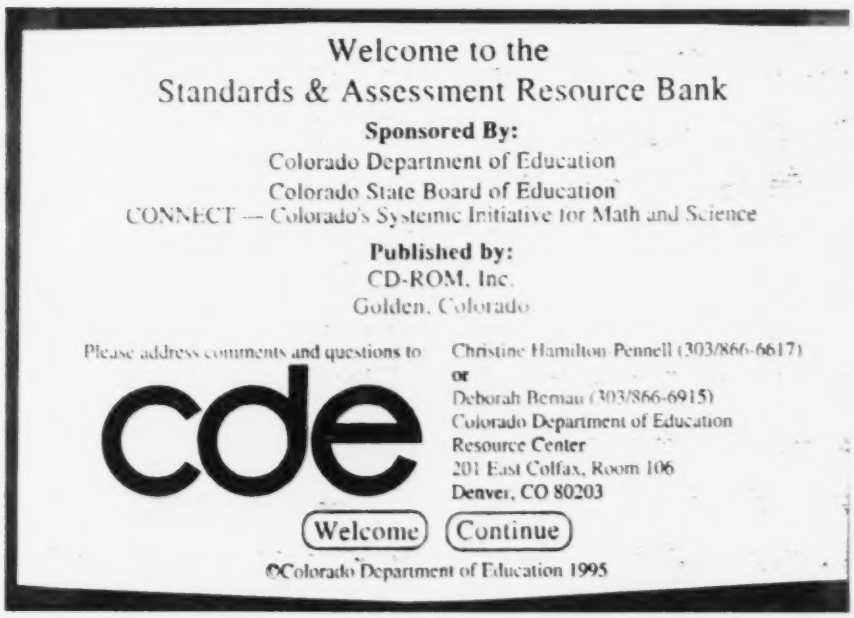
The focus of this section is the emerging infrastructure of support for school- and district-based efforts to implement standards, including the new State Standards and Assessment Resource Bank and the various programs, materials and services available to educators through the Colorado Geographic Alliance.

As you will see, a wide range of ideas, models and research and reference materials is being made available, in a variety of formats, in such areas as curriculum, instruction, assessment, equity/special needs, professional development, public information and accountability.

The Standards & Assessment Resource Bank

The Standards & Assessment Resource Bank

By Christine Hamilton-Pennell



Welcome Screen, CD-ROM Version of Resource Bank.

As is clear from this entire document, standards-based education changes the way we teach. We must focus our teaching on the desired result — what students are learning — rather than just "covering the material." This shift requires new skills in measuring what students are learning (assessment), and developing the processes and content to get them there (curriculum and instruction). In this new arena, where we can go to find out "what works" in the geography classroom? How can we find our more about successful models our colleagues are using?

One answer is the Standards and Assessment Resource Bank, managed by the Colorado Department of Education. The resource bank is designed to support implementation of standards-based education at the local level. In addition to the state model content standards, the resource bank includes national content standards, curriculum and instruction resources, assessments, materials for staff development, resources for special-needs populations and public information materials. The resource bank has been chosen as the mechanism for delivering the full text of curriculum and assessment materials developed under the criteria of the Geography Frameworks Grant.

A statewide task force determined that the resource bank must contain worthwhile and useful examples, and be easy to use, widely available and cost-effective. Technology provided some obvious solutions to the challenges inherent in managing and delivering vast amounts of information to a diverse, widely scattered audience. Thus, the

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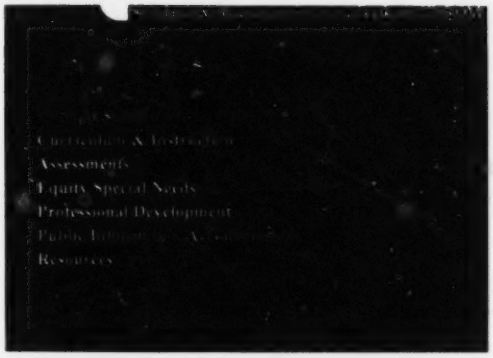


Main Menu.

resource bank is available in two electronic formats — CD-ROM and online.

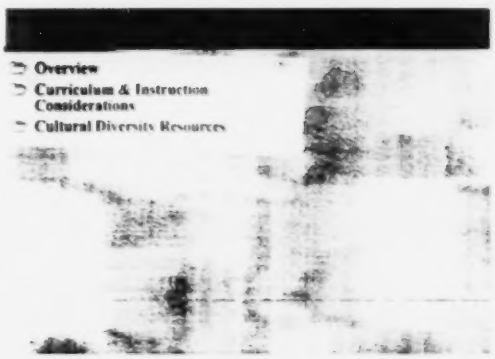
Of the two versions, the CD-ROM provides the most extensive information — more full-text documents, more types of information and more menu items. The CD-ROM version is available on a subscription basis for a nominal fee; there is no charge for use of the online version.

Let's explore what materials and resources a geography teacher will be able to find in the resource bank.

Compact Disc Version

Through the technology of CD-ROM (Compact Disc-Read Only Memory), text, graphics, audio excerpts and video clips are easily accessible. CD-ROM can hold 300,000 pages of text on one disk. CD-ROM is the fastest-growing technology in schools today, and offers features not yet available through most online systems. The following materials are included in the CD-ROM version of the resource bank:

- **General Information.** An overview of standards-based education, including legislation, glossary, articles and a video clip of Gov. Romer talking about the importance of standards-based education.
- **Content Standards.** The full text of the Colorado State Model Content Standards in geography, as well as information about other national, state and local geography standards.
- **Curriculum and Instruction.** Information about aligning curriculum with the standards as well as curriculum and instructional resources in geography. This is where one can find the Geography Curriculum Framework as well as the full text of exemplary units developed under the criteria of the Geography Frameworks Grant. Additional teacher aids, such as outline maps, are also available.
- **Assessments.** Technical and design issues related to assessment, as well as descriptions of assessments (including some samples) related to the geography content standards.
- **Equity/Special Needs.** Opportunity-to-learn standards and classroom practices for different special-needs groups, as well as articles and guidelines relating to cultural diversity and equity issues.



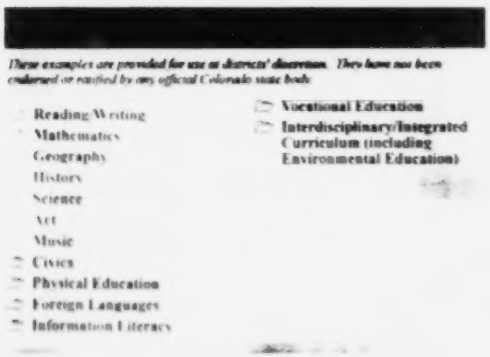
Curriculum and Instruction Menu.

- **Professional Development.** Strategies for professional development in standards-based education, professional development materials for training geography teachers and sources of training and technical assistance.
- **Public Information/Accountability.** Full text of resource guide for local accountability committees; information about effective public information strategies and materials; and full text of public information documents, including the Goals 2000 Community Action Tool Kit.
- **Resources.** Bibliographies of print,

online and audio-visual resources related to geography education.

Online Version

The resource bank is available online through the Pikes Peak Library District in Colorado Springs. Free local dial-up access is provided through ACLIN (Access



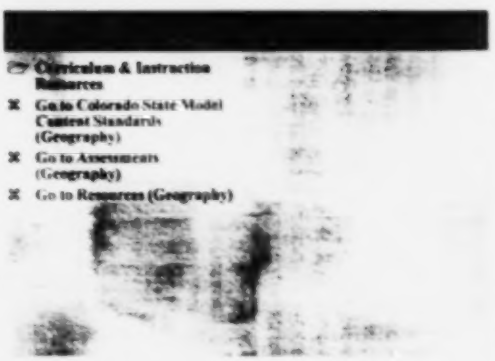
Curriculum Resources Menu.

Colorado Library and Information Network) and CARL (Colorado Alliance of Research Libraries). Pikes Peak Library District is also accessible through the Internet. The online version includes the following information:

- **General Information.** Full text of the Colorado standards legislation and a complete glossary, including terms specific to geography.
- **Content Standards.** Full text of the Colorado State Model Content Standards in geography as well as information about other national, state and local geography standards.
- **Curriculum and Instruction.** Information about geography curriculum and instructional resources, including where to obtain the sample units and other materials developed under the Geography Frameworks Grant.
- **Assessments.** Information about assessments related to geography standards and curriculum, including where to obtain sample assessments.
- **Professional Development.** Information about professional development resources and strategies, including where to obtain sample materials or find out about exemplary programs.
- **Public Information.** Full text of resource guide for local accountability committees and full text of public information documents, including Goals 2000 Community Action Tool Kit.
- **Resources.** Bibliography of print, online and audio-visual resources related to geography education.

Future Plans

The resource bank will be continuously expanded and updated. As new exemplary geography curriculum units, assessments and materials are developed, they will be added to the resource bank. The CD-ROM version will be updated every six months, and the online version as updates are received.


Curriculum & Instruction Resources
Go to Colorado State Model Content Standards (Geography)
Go to Assessments (Geography)
Go to Resources (Geography)

Geography Curriculum Resources Menu.

For more information about the resource bank, including hardware and software requirements, please contact Christine Hamilton-Pennell (303/866-6617) or Deborah Bernau (303/866-6915) at the Colorado Department of Education.

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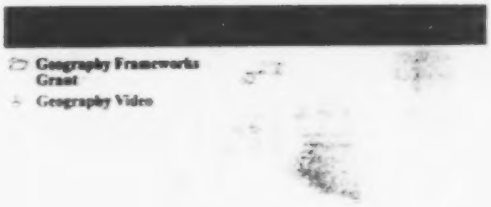
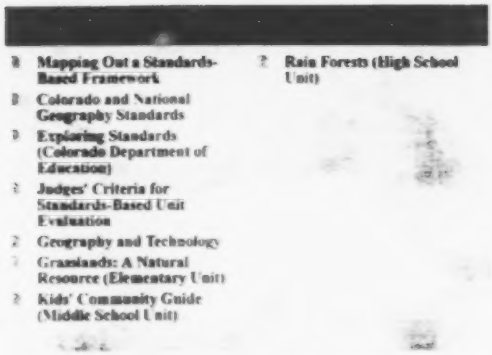


Geography Frameworks Menu.


Mapping Out a Standards-Based Framework
Colorado and National Geography Standards
Exploring Standards (Colorado Department of Education)
Judges' Criteria for Standards-Based Unit Evaluation
Geography and Technology
Grasslands: A Natural Resource (Elementary Unit)
Kids' Community Guide (Middle School Unit)
Rain Forests (High School Unit)

Geography Frameworks Grant Resources.

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Christine Hamilton-Pennell is the Director of the Resource Center, Colorado Department of Education.

Colorado Geographic Alliance

Colorado Geographic Alliance

When the Colorado Geographic Alliance (COGA) began its work in 1986, geography had virtually disappeared from the K-12 curriculum in Colorado. Geographers, administrators, K-12 teachers and interested citizens aware of the disturbing state of geography education formed the Colorado Geographic Alliance at the University of Colorado. Today, COGA is among the strongest of the alliances that operate in almost every state, providing a forum for content and instructional guidelines, effective teaching methodologies, professional outreach activities and the distribution of K- 12 classroom materials.

COGA represents 6,000 school teachers, curriculum specialists, administrators, professors and interested citizens who promote and work at improving geography education in Colorado schools. Since geography education has been recognized as a core discipline in the National Education Goals, Goals 2000: The Educate America Act, and in Colorado's HB 1313, all of the Alliance's efforts in 1995-96 and subsequent years will be focused on the dissemination and implementation of standards-based geography education in Colorado.

COGA seeks to promote and improve geography education in Colorado's elementary and secondary schools in order to enhance the quality of education for all Coloradans. The Alliance promotes education in geographic knowledge, skills and responsible citizenship, focused on critical and reflective geographic inquiry. It is important for the Colorado Geographic Alliance to work with teachers because they generally need immersion in geography if they are to become effective teachers of the subject. Moreover, since teachers play the central role in the classroom, their endorsement of geographic education is essential to curriculum change.

The National Geographic Society Education Foundation has provided consistent financial support to COGA since 1986. This support has been supplemented by funds from numerous other private and public sources. With these funds, COGA has provided a wide range of teacher education and public awareness activities including:

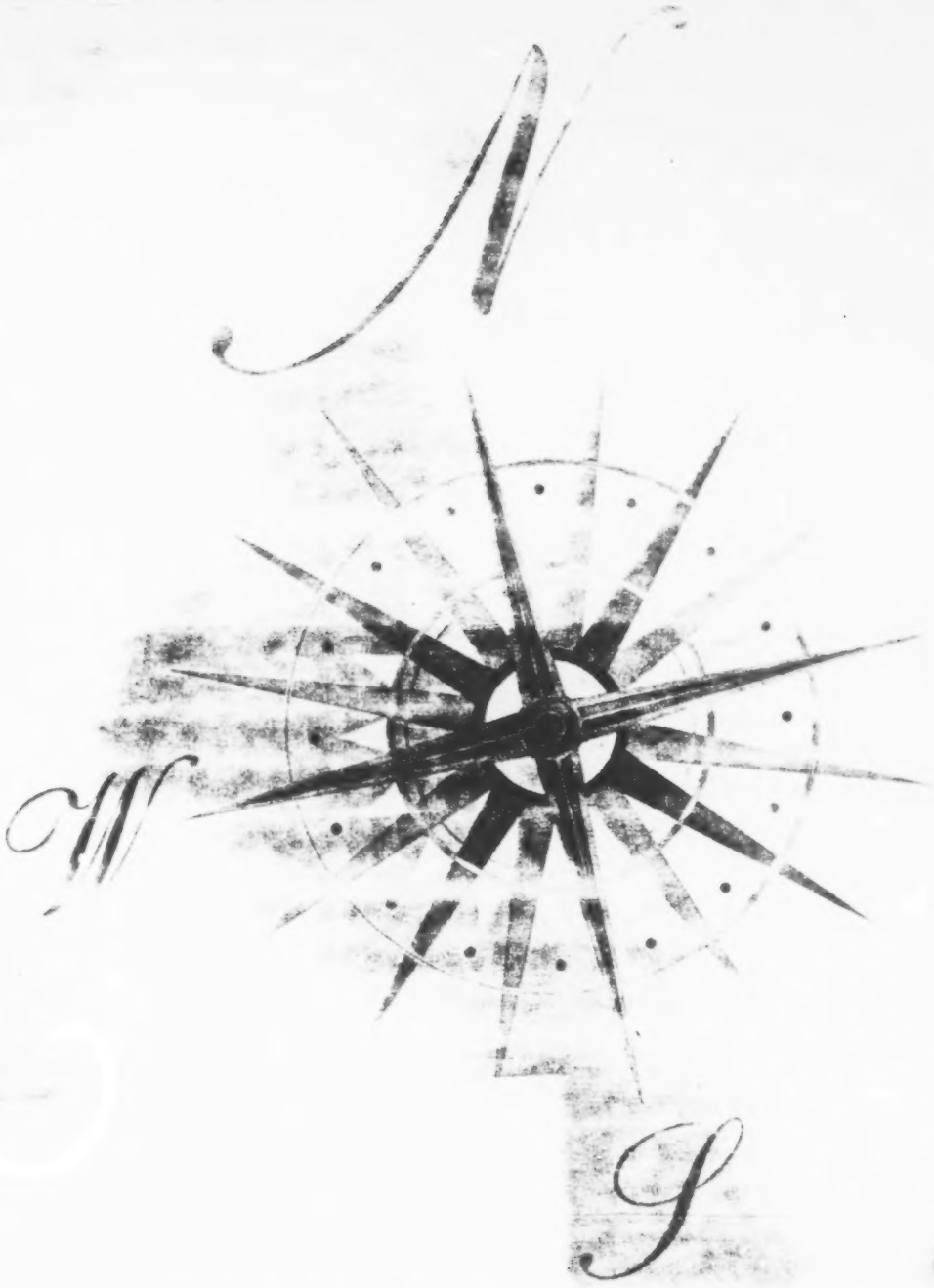
- summer institutes for geography teachers
- inservice workshops for teachers
- national/local conferences
- biannual newsletters
- sponsorship of video programs
- Geography Awareness Week programs
- clearinghouse for teacher-produced geography curriculum materials
- teacher grants

COGA continues to stress teacher education and the support programs because teacher endorsement of geography education is essential to curriculum change, especially in Colorado where curriculum control is highly decentralized.

The summer geography teacher institutes have produced an effective district team model for inservice teacher education. This model was incorporated into the first Alliance Summer Geography Institute (ASGI) organized by COGA in 1988, and the model has been a characteristic feature of the Colorado ASGIs ever since. Another consistent feature of the institutes has been an emphasis on issues-based inquiry geography teaching. There are now over 400 graduates of

these institutes, called Teacher Consultants (TCs). These TCs, geography education leaders throughout Colorado, constitute the core of the Alliance membership.

Professor David B. Cole of the University of Northern Colorado and Professor A. David Hill of the University of Colorado at Boulder to serve as co-coordinators of the Colorado Geographic Alliance. Membership in COGA is free and open to anyone interested in promoting geography education. Please call the COGA office (303-492-6854), housed in the Center for Geography Education at the University of Colorado at Boulder, with any questions.



APPENDIX

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Appendix

This section includes some sample activities, projects and demonstrations based on the October 1993 draft of Geography for Life and adapted to Colorado's new geography standards.

Standard 1: Seeing the World Geographically

1.1 — 8TH GRADE EXAMPLE

Explain the characteristics and purposes of and explaining differences among maps, globes, and other geographic tools.

The student evaluates the relative merit of maps, globes, and other geographic tools to solve problems.

The teacher informed his eighth grade students that soon they would be studying ways that their city had changed since it was founded over a century ago. Based on this study, the students would also be making some planning recommendations for the future. With that as background, the teacher gave a homework assignment asking the students to suggest at least three data sources that would be useful in this project and to give reasons for their choices. His purpose was to sharpen their skills in the acquisition of geographic information.

One student turned in this response for her assignment:

To find information about how our city has changed since it was founded, I would check the following sources.

1. **The official history of the city**. This book was written when the city celebrated its centennial several years ago. It has many old drawings, maps and photographs that show what life was like in the early days. Studying these will help me understand how the city has changed.
2. **Interviewing the Zoning Commissioner at City Hall.** This person will be able to give an overview of how people have used land in the city and how land use today is different than in earlier times because of things like downtown office buildings, shopping malls at the edges of the city, the new airport and all the linking streets and highways. The Commissioner has maps that show how the patterns of development have changed.
3. **Maps at the Historical Society.** The maps in the collection show how the city has expanded and how changes have been made due to improvements like trolley cars, busses and cars. The maps will also show the addition of new neighborhoods and shopping and business districts.

1.2 — 11TH GRADE EXAMPLE

Analyze maps from memory of the same place to determine similarities and differences.

The student identifies ways in which people's mental maps and their perception of places influence decisions of location, settlement, and public policy.

An high school geography teacher assigned a research paper asking students to identify one way that people's mental maps might change, and to suggest some factors that cause the mental map to change. The teacher asked each student to begin the paper with a single sentence thesis statement identifying the purpose of the report.

One student's mother had recently returned from a business trip to Baltimore. She

stayed at a hotel at the Inner Harbor, an area in the center of the city that has been completely renewed and gentrified. The student's mother said that the "new" Baltimore had so much to offer, she wanted the family to go there on a vacation. She also suggested that it would be a good place to relocate should that ever become a family option. As part of her research to help her acquire and present geographic information, the student used the brochures and maps her mother brought home.

For her thesis statement the student wrote:

"Within little more than a decade, the old Baltimore of abandoned waterfront warehouses, a decaying central business district and a polluted harbor has been transformed into a new Baltimore of elegant shopping malls and museums, a magnificent stadium, and a revitalized downtown with glass office towers reflecting a renewed and shining harbor."

1.3 — 4TH GRADE EXAMPLE

Make and defending locational decisions for human activity.

The student analyzes the location of places in absolute and relative terms and evaluates these locations for different human activities.

When a developer bought the old, run-down railroad station and gave it a massive face-lift with restaurants, upscale shops and boutiques, and a four-theater cinema complex, it was instantly an overwhelming success. In fact, it has significantly stimulated the city's downtown area and has become its centerpiece. That has meant increased automobile traffic on the main street and adjacent access streets. Unfortunately, the children at a nearby elementary school have been finding it difficult safely crossing one of the busy downtown arterial streets on which the school is located.

When parents failed to persuade the Traffic Safety Division of the Police Department to install a signal to allow the children to cross, the principal decided to make it a project for the school's student council. With the help of the fourth grade teacher, the children decided to circulate a petition, gather signatures and present it to the mayor and the chief of police. After several before-school and lunch time meetings, the student council came up with this statement for the principal's review:

To the Mayor and Chief of Police:

The students at Taft School need a traffic light and "Walk" and "Don't Walk" signals at the corner of Elm Avenue and Reed Street. There is so much traffic all day long that it is very dangerous to cross the street. We have counted more than 400 cars an hour. Even the crossing guard has trouble. Lots of times, the people in the cars don't even see the stop sign he holds up when children want to cross. The cars are going fast to get to the center of town. If a child is injured or killed at that corner in front of our school, it will be very sad. So you had better have a "walk" signal put up for the children of Taft School. All the signatures here are the students and teachers at Taft. We are very serious about this. When will you put up the signal? Thank you.

Standard 2: Places and Regions

2.1 — 4TH GRADE EXAMPLE

Describe how human and physical processes together shape places.

The student describes and compares the human and physical characteristics of places.

A fourth grade teacher in a self-contained classroom uses pictures as frequently as possible in his social studies lessons to challenge his students to analyze and interpret the physical and human geography of real places. He feels that this is a particularly effective strategy in getting the students to identify the basic relationships between human beings and their physical environments. It also helps them recognize that places are perceived differently by different people.

In one recent activity, he gave each of his students a travel brochures for the Disney World theme park in Orlando, Florida. He asked them to speculate on these questions and write down their answers:

- Where is this place?
- What is it like there?
- Why is it like this?

After examining the pictures, one of the children gave this response:

"These pictures tell about Disney World. They show all the things you can do there. People have fun there. There are lots of places to visit to learn things and have fun. Epcot Center tells about places all over the world. People can talk to Mickey Mouse, too. Florida is a good place to visit because it has good weather. There are palm trees, no oak trees and it is flat. There is lots of sunshine and you can swim the hotel pool all day long. It is hot there."

2.2 — 4TH GRADE EXAMPLE

Identify a region as an area with unifying geographic characteristics

The student depicts and describes ways in which regions are connected to one another.

Fourth graders investigate how their state is connected to other regions. The teacher asks each girl and boy to pick an item used on a regular basis and to prepare a diagram showing where its component parts are made or grown, where they are assembled or processed, what product results, and how the product connects the student to many places in the world.

Picture of a baseball glove glued to a sketch map of North America (drawn by group members) positioned over the Dominican Republic. Arrows link the glove to a picture of a cow in Brazil. A label explains that Brazil exports leather. A label connected to the Dominican Republic shows that many skilled crafts people make gloves in that country. Another arrow points to Venezuela where a label explains that the oil drilled there is needed to prepare the leather. A third arrow links the glove to the state where the students live. A label for the state explains that all the baseball gloves available at the local sporting goods store are manufactured in the Dominican Republic.

2.3 — 11TH GRADE EXAMPLE

Compare and contrasting how and why different groups in society view places and regions differently.

The student evaluates the causes and effects of ways that groups in society view places and regions based on their stage of life, gender, class, ethnicity, and belief systems.

As a weekend homework assignment early in the school year, an eleventh grade World Geography teacher asks his students to write an editorial about the cultural biases expressed in map projections. He tells them that the editorial should include references to two specific map projections and that it should be no longer than 500 words.

After a research session at the local library on Sunday afternoon, one student prepared this editorial which she turned in to the teacher on Monday.

WHY MAPS TELL HALF-TRUTHS

What is the true spatial representation of Earth? The answer, of course, is the globe. It gives the correct shape to all the planet's physical features but globes are not convenient to carry around; and the larger they are, the more awkward they are to handle. Instead, we use flat maps to represent the appearance of the world. But the challenge is to keep as much of the world's accuracy as possible. This is done through the use of projection, a method cartographers use to show all or part of the curved surface of Earth on a flat map.

There are many types of projections but none is perfect because each one in some way or other distorts some part of what the cartographer is trying to present. One of the best examples of this is the Mercator projection. At the equator, the representation of the world is quite accurate but distortion increases with latitude. And so Greenland appears to be about as big as China, and Europe is represented as the same size as South America. In reality, Greenland is only a quarter the size of China and South America is nearly four times as big as Europe. Such exaggeration makes the northern hemisphere look much larger in size than the southern where most of the countries of the developing world are located. To offset such distortion, there should be a broader acceptance of a fairly recent projection developed by Arno Peters, based on an earlier projection known as the Gall projection. The Gall-Peters projection is much more area-faithful than the Mercator. In fact, it is one of the most area-faithful projections ever developed, but many cartographers dismiss it because of what it does to the appearance of the continents. Even though its distortion is in its tear-drop portrayal of the world's landmasses, nonetheless the developing nations are presented as equal in their relative size. Even though such a projection is strange to view at first, it is worth getting used to because it creates equal area representations which means maps of greater equity and less bias.

Standard 3: Physical Systems

3.1 — 8TH GRADE EXAMPLE

Describe how physical processes shape environmental patterns of air, land, water, plants, and animals.

The student applies fundamental concepts of physical geography to explain the physical processes that shape patterns in the physical environment.

Two teachers in an eighth grade middle school setting agree to a geography competition involving the students in their classes. Each group is challenged to create a geography activity for use by students in the other class. One teacher has her students take climactic data from different places in the world, construct climagraphs and distribute them to the students in the other class. Teams of students analyze their climagraph and place a colored pin on its location on a world map. Then they must explain why they chose that location. Here is one of the climagraphs and the rationale for its location prepared by a competing team.

CLIMAGRAPH

	Low	High	Precipitation		Low	High	Precipitation
January	53	85	0.1	July	37	59	3.0
February	52	84	0.1	August	39	62	2.2
March	49	80	0.2	September	42	66	1.2
April	45	74	0.5	October	45	72	0.6
May	41	65	2.5	November	48	78	0.3
June	37	58	3.3	December	51	83	0.2

Note: This is a climagraph of Santiago, Chile.

"We see that the warmest months are in January and February so we know that the place is in the southern hemisphere. We also know that it never gets very cold or very hot so it must have a coastal location and is not in very high latitudes. Finally, it doesn't rain very much so we figure it is near a cold water current or in a rain shadow. Winter is rainy. That is typical in a Mediterranean climate. For these reasons, we say the place is in a Mediterranean climate area of South America. It looks like Santiago, Chile. Are we right?"

3.2 — 8TH GRADE EXAMPLE

Describe how ecosystems work

The student explains the distribution of different ecosystems and their impact on human populations.

The student explains the distribution of different ecosystems and their impact on human populations.

A seventh grade class studying physical geography and human-environment interaction

investigates the causes and effects of hurricanes. To cap off this inquiry, the teacher wants his students to examine the effects of hurricanes on humans and other subsystems of the ecosystem. Students have collected newspaper and weekly news magazine stories in the library about the effects of Hurricane Andrew in South Florida and Louisiana in August 1992. They compare these stories with accounts prepared by middle school students who survived Hurricane Hugo when it struck Charleston, South Carolina in 1989.

To organize all the information, students use a data retrieval chart they have developed. It contrasts the effects of the two storms on varying components of the ecosystem such as vegetation, animals, and specific community environments like tidal pools, wetlands, and barrier islands. One student summarizes the data on her retrieval chart this way:

The people, plants, and animals of Charleston had their lives changed forever in Hurricane Hugo. The flooding, high winds, and storm surge changed landforms such as barrier islands and wetlands and erased trees, shrubs and other vegetation in Charleston and its surrounding areas. The ecosystems of the region were altered by the storm. Many animals were drowned, snakes, birds, and fish were affected by the storm, and the places where shellfish live and breed were changed during the hurricane. People who live on the barrier islands along the coast near Charleston lost their homes and their property. Residents who rely on the environment for their livelihood such as fishermen and owners of tourist-oriented businesses were affected by damage to the ecosystem. They learned, however, that communities of people can come together to help each other and the environment on which they depend.

Standard 4: Human Systems

4.1 — 4TH GRADE EXAMPLE

Identify the characteristics of population, both locally and in other parts of the world.

The student describes and compares the characteristics of populations.

Each year a fourth grade teacher in an inner-city school uses the neighborhood to help his students understand how migration has had an impact on their lives. Every spring he pairs the children and asks the teams to develop a set of questions that will provide information about the neighborhood and the people who live in it. He asks them to look for both obvious and subtle cultural characteristics as they develop their questions as preparation for a walk he has planned. His purpose is to encourage his students to gather geographic information through observation as they study the neighborhood in which their school is located.

Here is a list of the questions the students on the last walk developed:

1. From what countries do many of the people come from who live in the neighborhood?
2. What languages do you hear when you walk around?
3. What kinds of clothes do the people wear?
4. What kind of food stores are there in the neighborhood?
5. What languages are used in store signs?
6. What kind of music do you hear when you walk down the street?
7. Are there ever any special parades or festivals in the neighborhood?
8. What kind of churches are in the neighborhood?
9. Do the people have gardens? What kind?

After the walking tour, the teacher has each team draw a picture showing their impressions of the neighborhood based on their observations and the answers to the questions they prepared. The teacher concludes the activity by having the students discuss the perspective about the neighborhood that each drawing represents.

4.2 — 4TH GRADE EXAMPLE

Describe how patterns of culture vary across Earth's surface.

The student identifies aspects of culture.

To help her fourth graders understand what culture is, the teacher has them investigate the links between their own lives and other parts of the world through a supermarket visit which she annually arranges. The task of the students is to do a label search to find the origin of at least twenty items that are stocked on the shelves and in the bins. Working in teams of three, each group must locate products imported from outside the United States, Mexico and Canada. To keep track of their investigation, teams complete a survey sheet showing the product and its country of origin. To conclude the activity, the groups summarize the results of the survey by computing the percentages of the foreign food products from each of the continents and representing them on a pie graph. Then

they answer the question: What do foods tell us about culture?

Here are the survey results and which will be turned into a pie graph by one of the teams.

Food Product	Producing Country	Food Product	Producing Country
Bananas	Guatemala	Tomato paste	Italy
Canned crab meat	Thailand	Mineral water	France/Germany
Olive oil	Italy	Cookies	Denmark
Canned ham	Poland/Denmark	Anchovies	Morocco
Crackers	France/Germany	Sardines	Portugal/Norway
Melons	Peru	Chocolate candy bars	Switzerland/ Belgium
Corned beef hash	Argentina	Tempura mix	Japan
Tea	Sri Lanka	Chili oil	Hong Kong
Coffee	Costa Rica/ Colombia	Asian pears	Japan
Cheese	France/Italy	Canned oysters	Thailand

To answer the question, the team wrote: "There are many kinds of food from all over the world in the supermarket. People like different things in different places. Not everybody likes to eat the same thing. Food tells us a lot about culture."

4.3 — 8th Grade Example

Identify the factors that influence the location and distribution of economic activities.
The student identifies factors influencing industrial location.

As part of her eighth grade World Geography course, a junior high school teacher does an urban studies unit each fall. As one of the evaluation activities at the conclusion of the study, she writes this sentence on the chalkboard:

There is always a good reason for a manufacturing town or city growing up where it does.Then she gives each student a sheet of blank paper and asks for a list of at least five single sentences telling why the generalization is accurate. Here is the response one student turned in:

Reasons Why Industrial Towns and Cities Grow Up Where They Do

1. They grow up near good farming areas where there is enough food to feed the population.
2. They are located near forests so that wood can be used for building and for heating and cooking.
3. They often grow up where there are trade routes.
4. Towns are built near sources of fresh water.
5. Towns and cities that become industrial centers are usually built near mines or port facilities.
6. Towns and cities are located in areas that are easy to reach so they can be accessible

to the outside world to carry on trade.

To illustrate her points, the student includes a sketch map for each sentence.

4.4. — 11 GRADE EXAMPLE

Analyze the size, arrangement, structure, and function of urban areas.

The student describes the nature and causes of change in urban areas in the United States and other regions of the world.

As part of the local community section of his World Regional Geography course for high school juniors and seniors, the teacher conducts a simulated zoning board meeting each January to debate how to use an undeveloped piece of urban land. Before assigning roles, he gives each student a copy of the following scenario:

The Lakeview Zoning Board will meet at 8 PM on Wednesday night in the Council Chambers at City Hall. The purpose of the meeting is to consider granting a zoning variation so that the Marvel Corporation can build a theme park called "Dynamo City." A spokesperson for Marvel reports that the park will be future oriented with adventure rides, electronic game pavilions, interactive science exhibits, and tasteful fun for the whole family.

The 200 acre wooded site is within the city limits but 10 miles from downtown in an area that is sparsely populated and largely undeveloped. The Lakeview mayor and city council members are opposed to the theme park. They would rather use the land to develop a housing complex of single family homes and low-rise public housing units. A group calling itself Citizens United for Better Sites (CUBS) argues that the land should become a city park and nature preserve. A local car dealer wants to put in an auto mart for new and used cars, recreational vehicles, and pick-up and heavy duty trucks. In addition, Mall Makers, Inc., a national developer of shopping malls, has given a firm offer to the site owner to purchase the land. Finally, the state transportation commissioner has proposed that a new municipal airport be built on the site to service the growing needs of Lakeview and its hinterland.

After the class finishes reading the scenario, the teacher divides the students into six groups, each representing one of the special interests noted in the report. To begin the process of preparing for the Zoning Board meeting, he first asks each group to identify reasons that might come up about using the parcel from the special interest groups. The three students assigned to represent the Marvel Corporation developed this list:

City officials — A mall would take business away from downtown and the smaller strip malls scattered around the city.

CUBS — An airport would cause noise pollution and traffic congestion.

Mall Makers, Inc. — An auto mart the size of the one proposed would quickly become an eyesore on the landscape and would discourage any other kind of development in the area.

Transportation Commissioner — Theme parks in may parts of the country are only entertainment fads that are often quickly abandoned only to leave behind failed promises of jobs and lasting prosperity.

Auto Dealer — The city already has an extensive park system, a zoo and several miles of developed beaches along its lake shore. Further, park land produces no taxes.

Marvel Corporation — Housing subdivisions that include public facilities are expensive to develop, costly to maintain, and generate minimum tax revenues for the city.

4.5 — 4TH GRADE EXAMPLE

Describe how and why people create boundaries

The student describes political units at different scales.

To help her students understand the nature of neighborhood and how people who live in neighborhoods define them as separate spaces, a fourth grade teacher has her students do "background checks" on four of their neighbors. She encourages them to talk with people who are of different ages and backgrounds. For example, she suggests a local shop keeper, the mail carrier, some of the older residents who are now retired, teenagers, and parents of friends. To help give direction to the survey, the teacher always holds a brainstorming session so that the students will know what questions to ask during the interview. She encourages each student to suggest a question that will help the class to understand what a neighborhood is and how each one has its own distinctive qualities. After the questions have been assembled and the students have them in their notebooks, the teacher reminds the class that it is more important to listen to answers people give than to write down all the information. She makes an important point of telling the students about the importance of learning to listen as a means of acquiring geographic information.

These are the questions the class decided to use after the last brainstorming session.

1. What do you think are the boundaries of the neighborhood? (Ask the person to draw a sketch map of these boundaries on a sheet of blank paper.)
2. Why did you pick these boundaries?
3. What makes this area a neighborhood to you?
4. What are some of the important places in the neighborhood for you? Why are they important? (Mark these places on the map the person has drawn.)
5. What has changed in the neighborhood since you first started to live there?
6. What do think is the center of the neighborhood? What are your reasons?

When the students complete their interviews and discuss their answers in class, the teacher asks each child to write a definition of "neighborhood." This is the answer provided by one fourth grader in the class: "A neighborhood is a place where people feel at home. Your friends and family are there. It has stores and schools. Our neighborhood is special.

Standard 5: Environment and Society

5.1 — 8TH GRADE EXAMPLE

Describe ways that humans depend upon, adapt to, and affect the physical environment.

The student traces how systems change over space and time.

An eighth grade middle school teacher has a large collection of maps in her classroom including some excellent relief maps of mountainous areas of the United States. In a recent assignment, the teacher asked her students to examine and compare relief maps and road maps of Pennsylvania and explain why roads are located where they are using an historical perspective. In the oral report one student presented to the class, she offered the following explanation based on her analysis of the maps.

"The northeast-southwest location of many ridges and valleys in eastern Pennsylvania influenced early roads and settlements. That was because it was easier for people traveling by horse and wagon to move along valley bottoms than over the many ridges. These ridges are very rugged and full of rocks and boulders which made travel difficult. In modern times, as road networks developed, routes over ridges were more expensive than routes along valley bottoms. Besides, many settlements were already located in valleys nestled between ridges and they needed good roads to connect them. So there is really a close relationship between where places are located as shown on the state road map and on the relief map. And much of where places are located in the mountain regions of Pennsylvania has a lot to do with their early history."

5.2 — 11TH GRADE EXAMPLE

Compare and contrasting how changes in the physical environment can increase or diminish its capacity to support human activity.

The student evaluates the consequences of human modification and transformation of the environment.

A high school geography teacher has recently received a small grant from a local public utility company to buy a computer and some software with geographic data bases to use in his classes. One of the data bases has historical information about changing amounts of forest cover in tropical regions. The graphics portion of the program shows remotely sensed images of the forest areas in Amazonia in Brazil. After introducing his students to the software program, the teacher writes this in-class activity on the overhead:

Using the computer data bases and the remotely sensed imagery, explain some of the implications of the reduction of forest areas in the Amazon region.

After studying the data bases, one student wrote:

"The data and images reveal that over the last two decades much forest has been removed from the Rondonia area of the Amazon. The remote sensing images show roads and buildings and patches of remaining forests. It appears that people from eastern Brazil have moved into the area to farm and raise cattle. This expansion of settlement has had a negative effect on wildlife and vegetation. However, many economists argue that one of the trade-offs is the promise of a positive effect on incomes of the people moving into the area. The long-term consequences of tropical forest removal are not fully understood at this point though many physical geographers and environmentalists fear they will be disastrous. Much more research needs to be done."

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5.3 — 11TH GRADE EXAMPLE

Analyze the effects of economic activity in modifying and transforming resources.

The student explains the relationship between resources and the exploration, colonization, and settlement of different areas of the world.

In response to a test question about the history of land use in the Caribbean Basin, an eleventh grade student in his school's elective course in the Physical and Human Geography of the Western Hemisphere gave this answer:

Many of the people who live in this region today can trace their origins back to Africa. Their ancestors were brought as slaves to the Caribbean by European colonizers in the 1700s and 1800s to work on the large sugar plantations. There are also some people of Asian descent in Trinidad. They are descended from immigrants who were brought from India and China by Europeans in the 1800s after slavery was abolished. Laborers were needed to work as indentured servants in the cane fields. Because volcanic deposits helped make the soils in this region fertile and very suitable for growing sugar cane, a large and cheap labor force was essential if the plantation owners were to make a profit each year.

Because of the scarcity of flat land on most of the Caribbean islands, there is a limit to how much sugar cane can be grown. That also applies to other tropical crops such as bananas, coffee, citrus and tobacco. As a result, many farmers have terraced the hillsides and mountains on their islands to make suitable sites for raising coffee. Today, coffee is one of the major cash crops in the region. Two factors — limited total land use area and the mountainous terrain — have placed restrictions on the economic development of the Caribbean for a long time. That was true even in the early days of European settlement and colonial development.

Standard 6: Applying Geography

6.1 — 8TH GRADE EXAMPLE

Describe changes in the spatial organization of a society over time.

The student analyzes how explorers influenced settlement in the United States.

In his course on the geography of the United States, an eighth grade teacher asks his students to develop headlines that might have appeared in East coast newspapers reporting on 19th century explorations during the nation's expansion westward. He requires an identifying date with each headline.

The following are some samples culled from his students' work:

- St. Louis Serves as Starting Point for Westward Bound Settlers (early 1800s)
- Thousands Follow Oregon Trail through Mountains in Search of Fertile Land West of the Rockies (1840s)
- Missouri Merchants Open Trade with Mexicans in Santa Fe (1820s)
- Cotton Comes to Texas as Cash Crop (1820s)
- Erie Canal Connects Atlantic with Great Lakes (1820s)
- Georgia Cherokees Trek 800 Miles to Oklahoma in Massive
- Government Land Takeover in Southeast (1838)
- Homesteaders Cultivate "Great American Desert" (1860s-1870s)
- Railroads Seek Right of Ways to Span Continent (1860s)
- Ghost Towns Follow in Wake of Spent Gold and Silver Digs (1880s-1890s)

6.2 — 11TH GRADE EXAMPLE

Evaluate a contemporary issue using geographic knowledge, skills, and perspectives.

The student evaluates contemporary issues by incorporating spatial and environmental perspectives, and defends the importance of doing so.

Each May, a high school principal invites one of the members of the junior honor society to present a brief address to its members at the Awards Assembly on a topic of current importance but with implications for the future. Developing a sense of social consciousness and global awareness is among his priorities for both students at the school and their teachers. The student whom he has selected as this year's speaker plans to major in oceanography when she attends the state university next year. Her topic for the talk is about the pressures on coastal and ocean resources. Here is a key paragraph from her ten minute presentation.

"Maritime trade connects the world's economies through the transfer of essential materials. Crude petroleum, ores and cereal grains as well as manufactured goods are examples of what I mean. Such trade requires considerable investment in harbor infrastructures. All this development in port areas across the globe puts adjacent coastal zones at risk for accidents and environmental damage. The freighters that frequent these ports are often major polluters because of routine operational discharges like ballast and other refuse and sewage. This has led to increased efforts to finance and develop waste reception facilities in many port facilities. Such responsible management of the

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ecosystem protects the interest of the next generation Japan and the United States are two good examples. Together they handle more than ten percent of the volume of the world's loaded and unloaded goods. Both countries have made extensive provision in recent years for maintaining and developing existing harbor facilities and protecting nearby coastal habitats at the same time. This kind of foresight and vigilance is essential if we are to reduce environmental risk."